

# The Iron Age

A Review of the Hardware, Iron and Metal Trades.

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## Westman's Kiln for Roasting and Calcining Ores.

The advantages commonly gained by using roasted or calcined ores in the blast furnace, are well known to pig iron manufacturers, and the only reason why roasting is not more generally done seems to be the idea that it costs too much. Theory, as well as experience, has shown, however, that this is often a mistaken economy. The extra expense of roasting the ores is amply repaid by a greater yield and an improved quality of the product of the blast furnace. Calcination, properly done, will remove from the ore water, carbonic acid, arsenic, antimony, sulphur and other volatile matters that may be present, and also partially change the protoxide of iron into peroxide. By the removal of these substances the ore, retaining its form, becomes porous and more easily operated on by the gases in the blast furnace. By this an increased production, with a relatively smaller amount of fuel, is possible; and as most of these substances, especially sulphur from its frequent occurrence and in large quantities, are detrimental to the quality of the iron, their removal from the ore is necessarily attended with benefit. Water, carbonic acid and many other volatile constituents, and even one equivalent of sulphur, or half of the amount in pyrites, may be expelled at a comparatively low temperature; but to remove the remaining equivalent of the sulphur a very high and oxidizing heat is necessarily required.

Various methods have been tried to roast iron ores, as in piles in the open air, in piles confined within walls, or in kilns of various constructions with wood or coal as fuel. It may be said, however, with entire confidence that no one has been more successful in constructing a kiln combining all necessary requirements with cheapness, than the distinguished metallurgist, E. Westman, of Stockholm, Sweden. His kiln found such favor with the ironmasters of Sweden that the Board of the Iron Association awarded him a prize of \$10,000 for his invention, and his kiln is now in general use in that country.

The fuel used in this kiln is gas exclusively, taken either from the blast furnace or from a generator erected for that purpose. The stack of the kiln (see illustration), may be from 25 to 30 feet high, conical in shape and lined with fire-brick. The lining is supported by a hollow iron ring. Immediately underneath this ring the walls are perforated by radial passages *b*, provided with doors, through which the roasted ores are withdrawn. The sides, as well as the bottom and the roof of these passages, are protected by cast iron plates. Through the circular pipe *c*, which is provided with smaller branches at equal distances on the circumference of the kiln, and connected with the openings *e*, the gases are introduced. The openings *c* and *d*, also afford opportunity for observing the operation of roasting, and, if required, of working down the ore by bars introduced through them. Air, necessary for the combustion of the gases, may either be admitted through openings in the lower doors or by a special arrangement in connection with the hollow iron ring supporting the lining. The unroasted ores are charged at *a*, and when sufficiently roasted are taken out through the doors *b*.

The great height of the kiln and the fact that the greatest heat is near the bottom, or where the ores are taken out, makes it possible to expose the ores to a protracted and gradually increasing temperature, approaching melting heat, without danger of cooling off and clogging before their withdrawal, and as this is done under an abundant supply of air, the sulphur, as well as other volatile matters, may be entirely expelled. The construction also permits an easy regulation of the heat in extent as well as in intensity. The capacity of a kiln depends upon the diameter at the bottom and the number of discharge openings. A kiln of 12 feet diameter with 8 discharge openings will, with proper attention and a sufficient supply of gases, roast about 50 tons in 24 hours.

The results secured by the use of Westman's kiln at a number of important iron works, where their operations have been carefully watched, have been entirely satisfactory. At Stora Kopparbergs Bergslags furnaces, at Fahlun, Sweden, it has been found possible to use very red-short ores after roasting, which were of no use previous to the employment of the Westman kiln. At the Fagersta Steel Works the kiln has been in use three years, and is accorded high praise by the management, who say it is indispensable to the production of Bessemer steel from the ores at their command. The Westman kiln is now in general use in Sweden. Only one has thus far been erected in this country, and, owing to peculiar conditions, it has not had a fair chance to show its full value. This one is at the works of Messrs. Cooper, Hewitt & Co., Hewitt, Passaic Co., N. J. Concerning it Hon. Abram S. Hewitt, in a communication to the *Bulletin of the Iron and Steel Association*, under date of March 3, 1869, says: "I take this occasion also to state that the Westman Roasting Kiln, mentioned in my report, is now working with entire success, and that Mr. Sjöberg, the Swedish engineer, who came out to erect it, is now prepared to build other kilns."

The importance of roasting ores is becoming better understood, and many furnace owners, especially those depending upon supplies of ores containing much sulphur, are beginning to appreciate its advantages. Theory will not warrant the notion, and experience has not established the fact, that a mixture of red-short and cold-short ores in the blast furnace will make a neutral iron of good quality, but only an iron less red-short or less cold-short, as the case may be, than would have been produced from either of the ores alone.

Mr. S. Sjöberg, mentioned by Mr. Hewitt, is Mr. Westman's agent in the United States, and may be addressed at Hewitt, Passaic Co., N. J.

A Hot Mine.—The Virginia (Nevada) *Enterprise* chronicles more wonderful

## Trade-Marks in Germany.

A judgment of great importance to American exporters has been pronounced by the Imperial Court of Germany, at Leipzig, in favor of Messrs. J. & R. Tennent, of Wellpark Brewery, Glasgow, and Riche court, London, plaintiffs, against Messrs. Deetjen & Schroder, brewers, Hamburg, defendants. The plaintiffs brought a similar action for piracy of their trade-mark—against the defendants in 1864, when, however, owing to the state of the law of Germany at that time, they were practically unsuccessful; and for the past thirteen years Messrs. Deetjen & Schroder have been using an exact *fac simile* of the trade-mark of Messrs. Tennent, whose only protection has been that the defendants were not allowed to use their signature. Until last year manufac-

figures. It was, therefore, in the judgment of the court, only a question between the parties whether the defendants, according to Section 9 of the Law of 1875, were entitled to a right in competition with the plaintiffs to the use of the trade-mark in question for this reason, because that mark was, until the commencement of the year 1875, generally acknowledged in the trade as the mark of the defendants' manufacture. That question is, in agreement with the Commercial Tribunal, to be answered in the negative. As is shown by the papers of the action brought before the lower court in the years 1863 and 1864, between plaintiffs and defendants, the defendants did not then sell the beer produced by them under the trade-mark in question as their beer, but as that of the plaintiffs. They went so far as to imitate the trade-mark and labels of the

to ignite the fuse, and carry or throw the keg as near as possible to the fire, or directly into it, and the sudden "concussion of the air" consequent upon the explosion and the shower of water, to say nothing of the flames, were instantly to extinguish the flames. The ancient Godfrey was not afflicted with any idea of gaseous extinguishment. In his description, Mr. Godfrey mentions as one great advantage, that his kegs can be carried into narrow alleys and where the cumbersome public fire pumps could not enter; and he refers to leather hose as having then been but lately invented, rarely in use, and the pieces thereof called "fire serpents."

## An Honest Silver Dollar.

The Boston *Commercial Bulletin* says: "The friends of a double metallic currency—gold and silver—are dividing into two classes. The first comprises those who desire the remonetization of the old silver dollar of 412½ grains. The second is made up of those who believe in so increasing the weight of the remonetized dollar that it will have the same intrinsic value of the gold dollar. This latter is coming to be known as an 'honest silver dollar.' Between the two classes the antagonism is as great as between the mono-metallists and the bi-metallists."

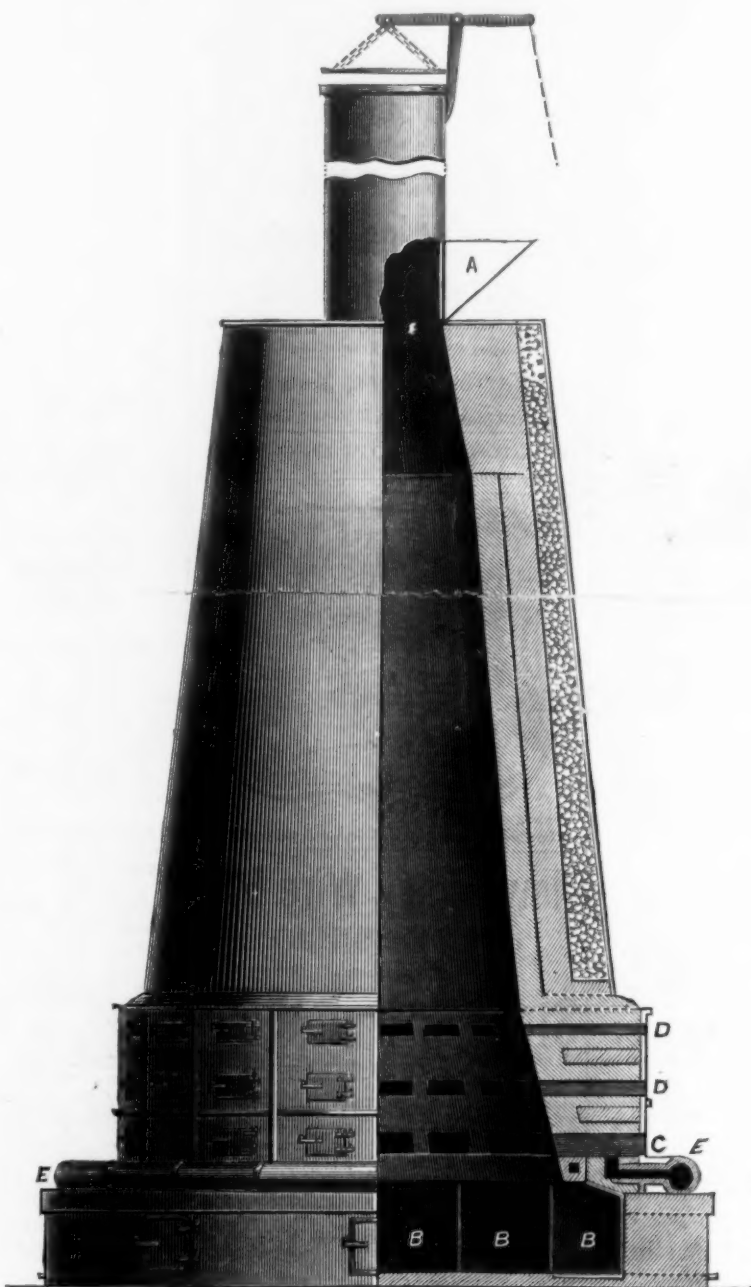
"To speak of an 'honest silver dollar' is to imply that some one proposes a 'dishonest' one, and that suggestion arouses the ire of the friends of the 'dollar of our daddies.' They seem specially tender of the memory of the fathers, which they think is disgraced by the implication that the dollar which for so many years had its place in our currency was not an honest one. They tell us with tears in their eyes that Alexander Hamilton was the father of the 412½ grains dollar, and that it was sanctioned by his compatriots of immortal renown, and, with much of the feeling that possessed Mark Twain, as he wept at the tomb of Adam, they cry out, 'When our new-fangled financiers talk about an honest dollar, do they mean that the dollar of Hamilton and Jefferson, and Adams and Madison, and Jackson—the dollar which was the unit of value in American currency from 1792 to 1873—the dollar in which all the countless transactions and responsibilities of the whole nation for over eighty years were made—was a dishonest one? Were all the great statesmen of the country, from Hamilton and Jay down to Chase, a pack of swindlers, cheating the people with dishonest coin? This is what these innovators certainly imply.'"

"Now ranting about our forefathers is the easiest thing in the world, and may cover up a multitude of dishonesties. We revere our patriotic sires, and intend no insult to their memories when we say that the silver dollar of 412½ grains is not an honest dollar to-day. It was an honest dollar, and not many years ago, either. Time was when a silver dollar of 412½ grains was worth more than the current gold dollar. But the relative value of the two metals has changed. It is of no consequence whether gold has appreciated or silver depreciated—hair-splitters may settle that—the silver dollar, once even more valuable, intrinsically, than a gold dollar, is now worth but about ninety cents. If, when the Congress of 1792 decided to coin a silver dollar, the relative value of gold and silver had been as it is to-day, the 'dollar of our daddies'—who were honest men—would have been made heavier. The silver dollar of our fathers was as valuable, intrinsically, as was a gold dollar. It would pay for as much merchandise in the markets of the world."

"There can be no possible objection to having two kinds of metallic dollars, provided the intrinsic value of the two be equal. But to coin ninety cents' worth of silver, mark it 'one dollar,' and compel its circulation as a legal tender, is a dishonesty which no man who is not more zealous in prating about the 'honor of our ancestors' than he is about defending his own honor will countenance."

"One currency for the bondholder and the laborer" is a popular rallying cry of the friends of the dishonest silver dollar. It is a cry which sounds well, but its charm for most of its admirers consists in the fact that the dollar which both would have would be a shoddy dollar, and the person who was compelled to receive it would be cheated. Hasn't the United States had about enough of two currencies of different values? The greenback, worth now about ninety-four cents, is a legal tender, precisely as the gold dollar is, but the two are not interchangeable. The law may prescribe that a silver dollar of 412½ grains shall be a legal tender, but until it becomes of equal intrinsic value with gold, they will not circulate together, and the entire gold coin of the country will be locked up in the vaults of banks and speculators, as it is now, or be shipped to foreign nations."

"There is but one way to establish permanently an honest 'silver dollar,' and that is by an international convention. If the United States should coin a new silver coin of such a weight that at the present price of silver it would have the same intrinsic value with gold, there is no certainty that they would long remain at par with each other. An international convention could so establish the relative value of the two metals as to secure their permanent interchangeability the world over. This would solve the question permanently, and nothing else will."



WESTMAN'S KILN FOR ROASTING AND CALCINING ORES.

natural phenomena than journals in less favored localities have the privilege of recording. The following is the latest: The Savage incline, at a point near the water, is so hot as to be almost beyond human endurance. But for their shirts the skin of the men would be blistered as though by a jet of scalding steam. A man from the mine, who was in Dr. Conn's office yesterday, showed a blister on his arm that was nearly as large as a man's hand. This blister was caused by exposing his arm at the bottom of the incline. It was so hot down at the water that in screwing a nut on the end of a bolt one man would be able to do no more than fasten a monkey-wrench upon it before he would be obliged to retreat. Another would then descend and give the wrench two or three turns, when he would fall back and a third man would go down and give it a few turns. Yesterday morning the giraffe got off the track well down the incline, and in trying to replace it one of a small party of men was so overcome by the heat that he fell down in a state of insensibility. His companions carried him from a point between the 1,700 and 1,900-foot levels to the 1,300-foot level of the Hale and Norcross mine, where he could obtain a mouthful of fresh air. He was still unconscious when he reached the point named. The Hale and Norcross mine is now quite cool, the draft in it having again changed, being once more down the main shaft.

turers in this country unfortunately had no protection for their trade-marks in Germany, where they have been pirated in most trades to a large extent. The present case has been before three of the courts. The Tribunal of Commerce of Hamburg, the first court before which the case was heard, pronounced an elaborate judgment on the 19th of June, 1876, in favor of Messrs. Tennent, but this judgment was reversed by the Supreme Court on the 1st of December last. It was then feared that the new German Trade-Marks Act would be ineffective in protecting the manufacturers of this country, but fortunately those fears have been set at rest by the judgment of the Imperial Court of Leipzig. The judgment is to the effect that as goods bearing trade-marks, after they have been distributed by commercial trade, and have been, in part, taken to circles far distant from the place where they were produced, can be quickly and easily recognized in the retail trade and by consumers. It is self-evident that the general appearance of the trade-mark is taken into consideration, and that thereby insignificant deviations, as, for example, such as are only caused by single marks added to the figures used, according to the circumstances, are of little or no consequence. The names of firms which might be used in the grouping of trade-marks have no significance, but stand in the same position as numbers, letters, or words used with the

plaintiffs in all their parts, even making use of their full name, as also the name of the plaintiffs' brewery, completely and exactly. They certainly had to give up the use of the name of the plaintiffs' firm in consequence of the judgment given against them, but could not then be compelled to do more. They thereupon continued to sell their produce, retaining the trade-mark of the plaintiffs and leaving out the name of the plaintiffs' firm. By virtue of these and other considerations, the decision of the High Court was ordered to be annulled, and the decision of the Tribunal of Commerce reinstated, and compensation of the costs of the second and third instance was affirmed.

An Explosive Fire Extinguisher.—The *American Exchange and Review* has discovered a quaint pamphlet, rather a book—part controversial, part advertising—by Ambrose Godfrey, dated 1724, garnished with Latin quotations, and heralded with even more than the usual antique elaboration of title page. Godfrey in his book claims the invention of a fire destroyer—a watertight keg, bound with wooden hoops, and to be filled with water. In the center of the inside was a tight metallic vessel, filled with gunpowder, having a fuse extending to the outside of the top of the keg; and the outside of the machine was covered with wicker-work, and had two handles. The idea was



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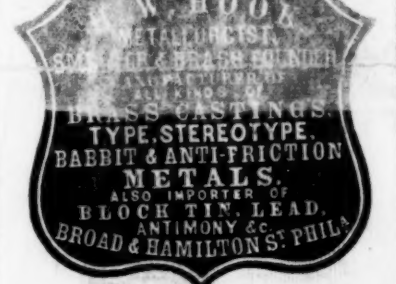
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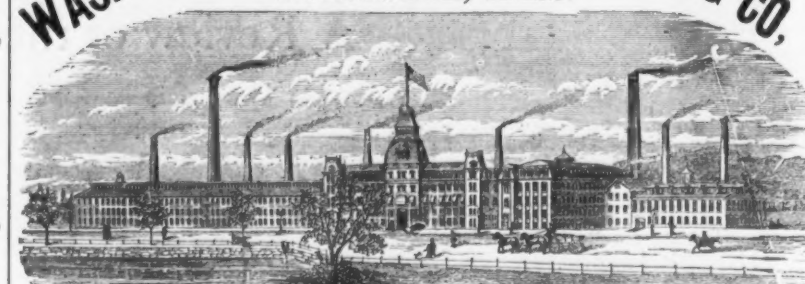
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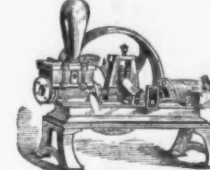
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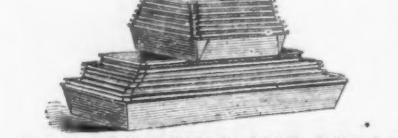
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## An Improvement in Ships' Compasses.

Mr. Stephen Longfellow of St. Louis has recently invented a ship's compass, designed to overcome variations of the needle due to local causes, such as the use of iron in construction or the carrying of large masses of iron as cargo. The bowl of the compass is surrounded by four magnets, in the form of segments, each segment one-sixth of the circle. They are insulated by means of porcelain or glass knobs so completely that a six pound magnet placed within a very short distance fails to effect them. These magnetic segments are put in slides around the upper part of the bowl of the compass, and being attached to jointed arms they can be readily adjusted to the plane of the chord in a broken circle, or grouped together on one side of the compass. Their ordinary position is in the plane of the chord, extending around the upper rim of the bowl and distant therefrom only about one-fourth of an inch. They probably effect the same purpose thus placed as Professor Airy designed to effect when he recommended the use of magnets placed near the compass and so arranged as to neutralize the influence of all other local attractions, but the inventor claims that these segmental magnets are much more efficient than any arrangement of magnets on the ship's deck, or of a complete circle of magnets designed to neutralize other local attractions. One of Mr. Longfellow's compasses has been made for him by an optician of this city, and the needle shows practically no deviation when masses of iron are brought near it, although the same masses of iron cause a marked deviation in an ordinary compass. Magnets were also used in an experiment on the effects of local attraction with the same result, a six-pound magnet within a few inches of the Longfellow compass failing to deflect the needle. The segmental magnets may be grouped together to counterbalance any extraordinary attraction proving sufficiently great to affect the compass when the magnets are in their normal position, but the inventor does not anticipate that there will be any necessity for calculations or deviations from local causes when his compass is used, nor for changing the position of the magnets as arranged in corresponding positions around the rim of the bowl.

The compass has many minor improvements in form and details over the ordinary ship's compass. The bowl is not a true hemisphere but is shaped like an oblong acorn cup and has a hollow ball on the bottom, which may be weighted with shot. The spindle on which the needle rests, instead of being fastened in lead at the bottom of the bowl, is screwed up through the bottom with long bearings so that it may be surely maintained in its vertical position. The inclosing shell which is designed to protect the compass from storms, and the lamps for night observations are also of new forms, but the chief feature of the new compass is its use of segmental insulated magnets, for equalizing or neutralizing local attractions. If in practical trials it should do what its inventor claims for it, one great source of marine disasters will be removed—the errors arising from unknown variations of the compass due to local attractions.

## A Field for American Enterprise.

A communication from Mr. James V. Thomas in the New York Times presents the following facts bearing on the proposed isthmus canal: "You have perceived that in this communication I address myself to two arguments; the first, that of navigation, and the other what I may call colonial development. A Nicaraguan canal would make New York the central commercial city of the world, and make San Francisco her associate. But it would do more: it would give American planters, mechanics and merchants an immediate and a near field to create another India in place of that which is rapidly forestalling even our domestic productions. Hot and heathen India, as we presume to call it, sent nearly 3,300,000 hundred-weight of wheat to England last year—one-sixth as much as the United States, one-third as much as Russia. No land can compete with the infinitely versatile conquest of England in the East, except tropical America. With a foresight that was almost unparalleled in national economy the British government began, at the close of the American revolution, to compensate in India for the loss of North America. The year of Cornwallis's defeat at Yorktown signaled the final defeat of Hyder Ali, and the Marquis Cornwallis was sent to preside over India before the adoption of our Constitution. In 1855 the East India Company ceased to exist, and 18 years thereafter the Queen added to the jewels of her crown that of the 'Great Mogul.' No portion of her dominions is more easily ruled; none gives so extensive a field of investment and return. The British revenue from India is \$250,000,000 a year, or nearly the total cost of operating the United States Government. The British army in India employs and subsists 200,000 of Her Majesty's subjects, and controls 240,000,000 human beings. They make a commerce of \$500,000,000 a year, cotton, jute, rice, tea and indigo leading. They give employment to 19,000 vessels and to 6500 miles of Indian railroad, in which \$500,000,000 find profitable investment. India at first was a most discouraging region for enterprise, with its terrible climate and dense and fierce population. In Spanish America, which repeats nearly every natural production of India, and adds many others exclusively its own, there are less than 30,000,000 people, more than two-thirds of whom live on the Pacific slope; they are weary of revolutions, ripe for orderly government, hospitable to strangers and more frugal than ourselves. They lack those things in which we are most redundant—organizing power, machinery, practical purpose and influence over European commerce."

**The Channel Tunnel.**—At a recent meeting of the French Society of Civil Engineers the proposed submarine tunnel between England and France was discussed. It appears that, owing to the geological formation of the bed of the channel and other reasons, it may be expedient to trace the tunnel, not in a straight line, but in a curved direction. M. Larousse, a hydrographical engineer, who had been invited to attend the sitting, gave the results of some calculations which he had made to determine

the amount of deviation which would be likely to take place in driving galleries starting from opposite shores so that their axis should exactly meet midway between the two shafts from which they depart. Allowing the maximum error which is at all likely to be made, either in measuring distances or in reading off angles, M. Larousse calculates that in the case of a straight tunnel the total deviation of the axis would not exceed 128 meters from the right line joining the two starting points. With an indirect trace formed by straight lines starting from either end, and joined in the center by an arc 2500 meters in length, having a radius of 2700 meters, the maximum deviation of the axis of the two galleries would not exceed 4.4 meters. With an indirect trace formed of five curves the maximum deviation would not be more than 8.35 meters, and therefore very slightly in excess of the width of the tunnel, which it is proposed should be 8 meters.

**American Silver for China.**—The silver trade between the United States and China, both on home and foreign account, is rapidly increasing. A few days ago a sale of exchange in London to the amount of \$1,000,000 was made by the Bank of New York, as agent of the Bank of Nevada, to Messrs. Von Hoffman. The exchange was against silver bullion and trade dollars shipped from San Francisco to China direct on London account. The Bank of Nevada, it appears, owns the Consolidated and Virginia silver mines, and is making great efforts to control the silver trade, which naturally belongs to the Pacific Coast. Direct communication between San Francisco and China offers great advantages to London bankers. Formerly, when the business was carried on entirely from that city, it required eighty days for silver to reach its destination, but a dispatch sent now to the Pacific Coast will enable it to be delivered within thirty days. This large sale of exchange can also be looked at in another aspect, in that it was the means of keeping gold to the amount of \$1,000,000 in the country. As giving an idea of the present condition of the silver trade of San Francisco, it may be mentioned that on the 6th of May last the total shipment was upward of \$1,000,000, and on the 17th of the same month \$4,000,000, proportioned out in silver bullion, Mexican and trade dollars.

**Iron Paving.**—By permission of the Commissioners of Sewers of the City of London, a portion of the new wood paving in Beech street has been charged with iron (3 cwt. to the square yard) by way of experiment. The object is to increase the durability of wood and preserve and protect it from heavy racking traffic, and to test the practicability of securing small blocks of iron without framework, and so deaden the noise and counteract the other disadvantage of metal, as hitherto applied. The ordinary wood paving blocks are beveled by machinery on the upper and lower edges, and between each row is laid a row of cast iron blocks of double wedged section thicker at the upper and lower surfaces than in the center, so as to fit mechanically between the beveled wood blocks, which on section are thicker in the center than at the upper and lower surfaces. The iron blocks weigh 16 lbs. each, are rounded and serrated on surface for foothold, and perforated for grouting material, and are bedded in sand on the ordinary concrete bed. The designer and patentee, Mr. Dennison (a London architect), states that the cost, though heavy at first, will not in the long run exceed either granite, wood or asphalt.

**The Proposed Des Moines River Bridge.**—The iron bridge which it is proposed to build across the Des Moines River will be the longest in the State of Iowa, measuring 900 feet, in six equal spans. At first bids were entertained for combination as well as iron bridges, but were soon set aside. Some dozen or more different plans or specifications were referred to the most competent engineers to be found, for their examination. Their report was requested on the merits of the designs offered by the several bridge companies, regardless of the prices bid. The engineers, Maj. Stickney, in charge of government works at Keokuk, and L. M. Johnson chief engineer of the Keokuk and Des Moines Railroad, presented their report to the Des Moines supervisors last week, and the contract was awarded to the King Iron Bridge and Manufacturing Company, of Cleveland, Ohio. The engineers' report recommended the plan and specification submitted by them as being the first in point of merit, which, no doubt, had much to do with the awarding of the contract. The action of our Supervisors in giving the contract to the King Company gives general satisfaction, and it is expected before the first of January, 1878, to have a first-class iron bridge, which will be of great benefit to the business interests of the city.

**A Nova Scotia Iron Bridge on the Intercolonial Railway.**—The Starr Manufacturing Company, of Halifax, has just brought to a successful completion the Elmsdale iron bridge, on the Intercolonial Railway, a single span of 150 feet, crossing the Elmsdale river. The old wooden bridge was removed on Friday, and the trains crossed on the new bridge. The official test of the work was made by Mr. Alex. McNab, C. E. Four locomotives, weighing respectively 61, 60, 56 and 53 1/2 tons, were employed. The heaviest two were, for the first test, placed on the center of the span. Next the four engines and one tender—a weight of 250 tons—were placed on the bridge, covering it from abutment to abutment. Then two of the engines were run over the bridge, at a speed of 40 miles an hour. The greatest deflection in the test was less than one inch—an extremely satisfactory result. Finally the four engines were run across at the speed of 35 miles per hour. This is, we believe, the first work of the kind that has been attempted in Canada, and the Starr Company is to be congratulated on its enterprise. The bridge was designed by Mr. Forbes, and erected under the foremanship of Mr. Henry Mason, and everything was so arranged by the company that not a single train was stopped during the progress of the work, a great portion of which was done by night.



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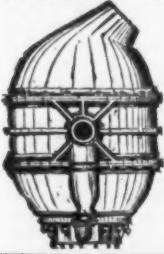
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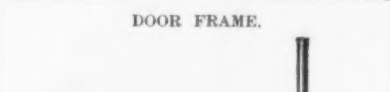
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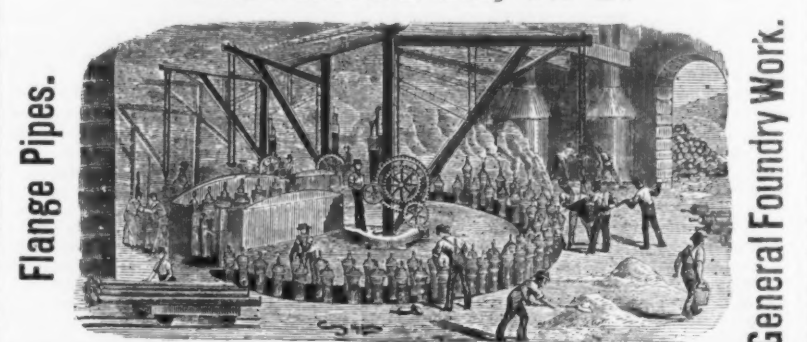
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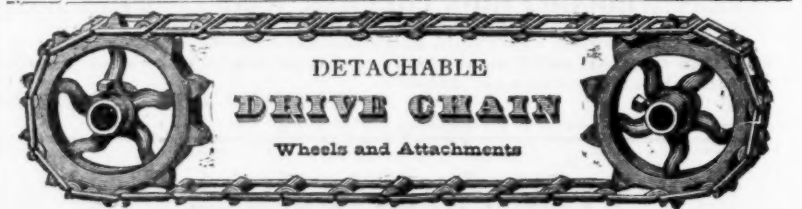


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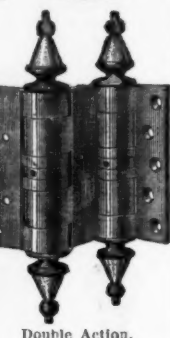
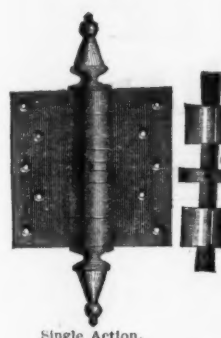
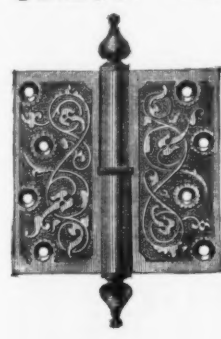
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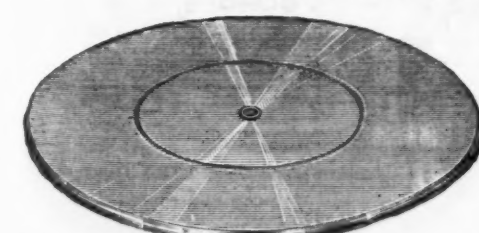
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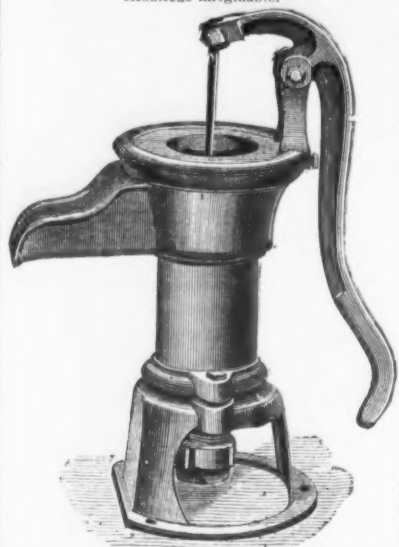
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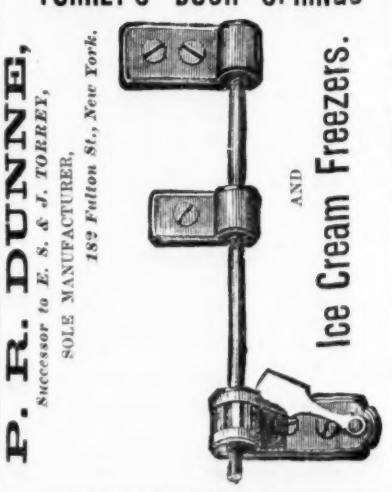
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Trade supplied.**The Manufacture of Gongs.**

The effect of hammering renders Chinese gongs extremely brittle, a sharp, sudden blow causing them to fly to pieces like glass. The Chinese, therefore, use them with great care near the outer edge, tapping them gently with a padded stick, and cause the vibrations to increase very gradually until their full sound is evolved. When by accident they are broken the pieces are collected with great care for the fabrication of new gongs. These pieces are heated to a dull red, and when cooled are easily broken into fragments. The best of these are selected, and being mixed with the metal scraped off the gongs in the manufacture, are melted in common crucibles, each crucible containing 7 or 8 lbs. of the metal, in a special furnace which holds two crucibles. The fuel used is a kind of short-flamed coal, something like anthracite in appearance. The combustion is conducted with much care, the coal being placed around the crucibles by means of large tongs through a circular aperture in the furnace; and the heat is maintained by means of a simple blower, which consists of a long rectangular box with a wooden piston and clappers.

When the contents of a crucible are melted the latter is taken from the furnace and weighed, and as soon as it is emptied it is refilled and replaced in the furnace. The temperature is very high, and it is in the upper part of the furnace that the broken metal is heated to redness, as already stated.

When melted the metal is well stirred in the crucible before being turned out, the oxide and scum being at the same time carefully removed from the surface. It is then poured out into a mold, which consists of a disc of iron lying on a stone slab, and on which is placed a rim of clay to form the edge of the mold. The whole is then greased with oil obtained from oleaginous peas and sprinkled with fine sand; a conical cover of burnt clay is placed on the moist clay ring, and an orifice at the top of the cone is fitted with a funnel, through which the molten metal is poured. The object of all this arrangement is double; it prevents the metal cooling too rapidly in the mold and it protects the workmen from the spitting of the metal. When the metal is set, but still red, the cover and the clay are removed, and the cake, which is less than half an inch thick, is well scrubbed with a sort of wooden brush on both sides to remove all impurities.

The first hammering is performed while the gong metal is still red, on a piece of cast iron about 6 inches high and 10 to 12 inches in diameter, and mounted on a block of wood. The disc is then beaten with a hammer which has a spherical head, and which, having a long and flexible bamboo handle, allows the workman to strike a hard but not dead blow. Two men are employed in this operation, one wielding the hammer and the other turning the metal disc in such a manner that it is gradually rendered concave. When this first hammering is finished, a disc of 14 inches diameter is raised to 2 1/2 to 3 inches; the piece is then carried into another shop, where there is a furnace about 4 feet in diameter, heated with charcoal, and furnished, like the former, with a blowing box. A skilled workman, who is seated by the furnace, removes the disc from the latter at the critical moment to an anvil close at hand, and guides it while it is being hammered. On one side is a cistern of cold water, level with the floor of the shop, and on the other is a simple machine on which the disc is clipped round the edge of a cold chisel. While being heated, the workmen turns the partly formed gong round and round and over and over in the mass of incandescent charcoal, so that the metal may be heated thoroughly throughout; and when on the anvil which, like the former is a mass of cast iron, it is directed by the chief workman and beaten by five men with hammers and long handles. A peculiarity in the arrangement is that three of the men hammer continually in regular rotation, while the other two wield larger hammers, but beat in unison with the rest. The ability and precision which these men show with their heavy hammers are said to be marvelous. The chief workman stops the operation when the sound of the metal tells him when it is getting cool, places it again in the furnace, and when sufficiently heated it is hammered a second time in the same manner. When this is done the gong is nearly of the proper form, and five or six in the same stage of fabrication are then heated together, and afterward hammered together on the anvil. While this is being performed, all the five strikers aim at the same spot, the fireman turning and directing the work. By this system all the gongs are brought to the same shape and thickness, one with the other. But the hammering is continued even after this, the two strikers exchanging their heavy hammers for wooden mallets with flat faces; this hammering is continued for a long time—three-quarters of an hour, says M. Champion—for gongs only 20 inches in diameter. Finally the gongs are separated, and each one again hammered alone—principally, it would appear, in order to make any corrections in form—and the edges are carefully pared with a cold chisel. At this stage the gongs are very brittle, clippings being easily broken between the fingers; they are, therefore, heated to dull redness and plunged for a few seconds in cold water, which is said not to contain any added substances to aid in the tempering.

The gongs are then taken into another shop, where they are scrubbed with a woolen rag and salt water; the water in evaporating leaves a small amount of salt on the metal, and the gong in this condition is again placed in the furnace, turned about in every direction and again hammered. When the central portion of the gong is finished the edges alone are heated, in order that any faults may be corrected. During these last operations, in order that the action of the fire may be more regular, and that no heat may be lost unnecessarily, a large sheet-iron cover, suspended to a bamboo handle, is held over the gong while in the fire, and is lifted from time to time to allow the firemen to see and turn the work.

Still the work is not yet completed; the edge of the gong has to be turned up to the proper angle, which operation is described as requiring the greatest ability in the workmen, for a single false blow would cause the metal to crack. The gong is now heated to redness for the last time and thrown into cold water, where it is left for two or three minutes, when it is taken out and briskly rubbed with a wooden mallet to remove any oxide or foreign matter that may adhere to the surface. The final correction of the edge of the gong is effected by a workman who sits on the ground, and who uses two hammers with short handles, one to strike with and the other as an anvil. When he has completed his work another man takes the gong, places it on an anvil about 8 inches square in the face, and with a round-faced hammer, weighing about one pound, with a short handle, passes over the surface, systematically commencing at the center and proceeding by concentric rings to the outer edge. Sometimes, however, the blows are given in the direction of the radii, but the reason of this is not explained. The blows are vigorous, but the wrist of the workman must be elastic, as it were, so that the shock shall not last too long; but with all possible care the work sometimes fails at this point, and should a crack occur, which the workman knows immediately by the sound, the piece is thrown with the waste metal. The traces of this last series of blows are generally apparent in the finished gongs, although before leaving the factory they are scraped with steel tools, either entirely or partially, the scraping being always effected from the center to the circle indicated.

The composition of these gongs has been found by the analysis of many specimens to be as follows:

Copper.....	82.00 parts.
Tin.....	17.00 "
Iron.....	1.00 "
Nickel.....	traces. "

The last-named metal can only be discovered by operating upon several grammes of the alloy.

In the manufactory inspected the men were, on account of the excessive heat, working only during the night. They were paid fixed sums, and were bound to produce a certain number of gongs. The foreman who had the complete direction of the work received one piastre (about 4/6) per day, and the workmen half that sum. The whole of them worked all but naked.

At Pekin and other places in the north of China, gongs may sometimes be seen a yard and even more in diameter; but these are rarely seen in the shops; they are said to be made in Cochinchina. A remarkably fine example was shown in the Japanese section of the Paris Exhibition of 1867; it was suspended, as usual, by means of silk covered cords, and was struck by means of a piece of wood weighing probably 20 lbs., which was also suspended with one end opposite the center of the gong. The sound of this instrument was superb. The resonance of gongs varies materially, and the Chinese class their tones as male or female; those which have been subjected to the most careful and prolonged hammering produce the male tones.

M. Champion remarks that the Chinese gong makers have a careless and apathetic air, but the skill, sureness of hand and vigor which they exhibit in effecting the above long and tedious operations are surprising; their activity and energy is such that it is questionable whether any European workman could conduct such an operation successfully in the same time. The most celebrated place for the production of gongs is Su-tchou, a town remarkable for many manufactures. The work is not carried on during the hottest months, on account of its laborious nature. The tam-tam is a necessary instrument at all marriages, funerals, public and religious fetes, in short, in all ceremonies, and even on the occasion of visits of the superior mandarins; the demand for them is consequently enormous, and their production gives employment to a large number of men.

The *American Architect and Building News* says: "The time seems to have fully arrived for some prompt and decisive action to be taken by the architects of the country with reference to the Washington monument. It now appears that the Board of Army Engineers, composed of Gens. Gillmore and Duane and Col. Kurtz, have reported to the Monument Association a scheme for such a strengthening of its foundations as will enable it to bear the whole four or five hundred feet of brutal and inexpressive mass according to the original design. We also learn that Gen. Meigs on the 5th inst. submitted to the Association a plan to terminate the present structure with a metallic spire 140 feet in height, making a total height of 315 feet and 'resembling the tower in the Public Square of Vienna.'"

The additional weight, it is said, would be 4,147,000 pounds. In regard to the design the *Architect* says: "If it is St. Stephen's which is to be the prototype of this new development, the ecclesiastical German Gothic of the fifteenth century will hardly recognize itself in this queer disguise and in this new place, and will find itself put to strange uses in serving as a memorial to the American republican hero of the eighteenth. Another plan under consideration by the Association is that of Mr. Larkin G. Mead, who would place upon the colossal stump a statue of Washington 85 feet in height, made of chin hammered metal. We would not speak lightly or without due respect either of the military engineer who would crown a bare truncated stone obelisk 175 feet high with a light metallic spire of inferior height, and dedicate the inexpressible combination to the Father of his Country as an object of art fitted by peculiar grace and purity of design to indicate the love and veneration of a great people; or of the sculptor who would finish the broken shaft with a figure 20 feet taller even than the 'Bavaria' of Schwanthaler, which is obliged to be content with a pedestal only 30 feet high. But we venture to submit as architects and citizens—not as geniuses—that neither the original project nor its modifications, so far as we know them, should be presented to the world as the homage of the best American art to the best American patriotism."



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Pawtucket, R. I.

The American File Company have the exclusive right to use the Bernot process for cutting files. By this method all the advantages of hand cutting are secured, together with an accuracy unattainable in hand work. They are the only manufacturers who employ machinery for testing files and steel.

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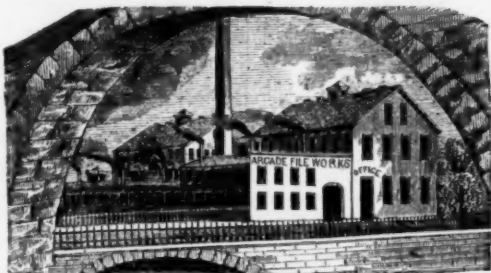
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Cast Iron,  
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**Non-Extensible Razor Belt.**

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In this Strap elasticity of the leather to stretch and become loose and porous is prevented by the use of a patented non-extensible base, which supports the leather and secures  
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We make this style with single rod, double rod, and Wood frames, and intend that it shall, in quality compare favorably with our other well known brands.

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Made from English Cast Steel.  
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**FORGED**  
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Manufactured from the best of NORWAY Iron, and warranted to give entire satisfaction.  
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WOOD DESIGNS AND  
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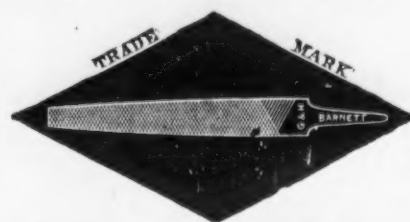
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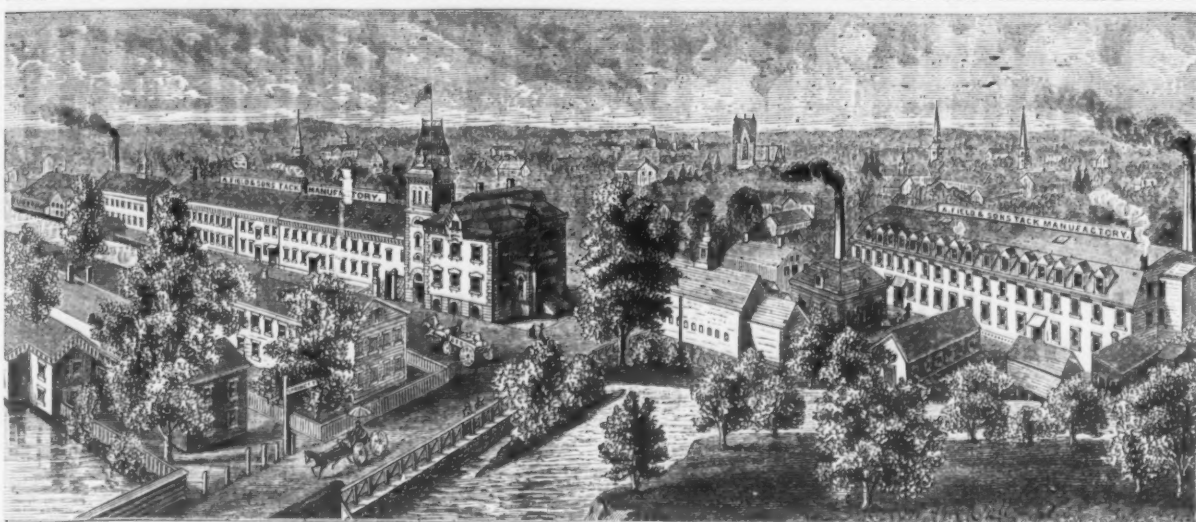
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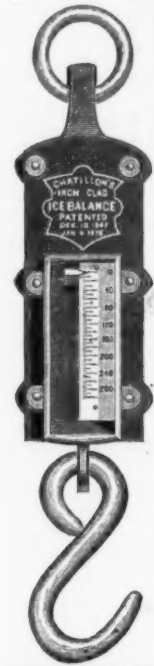
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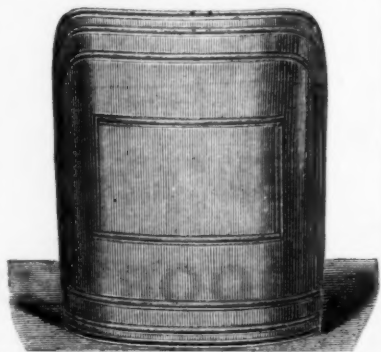
Section Showing Edge.

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### PATENT CUTTERS

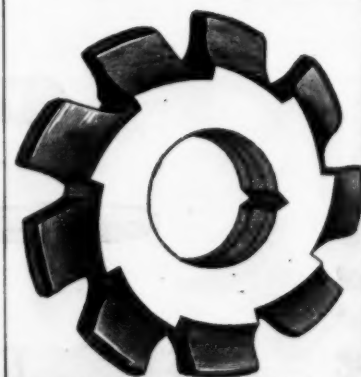
For the Teeth of Gear Wheels

Which Can be Sharpened by Grinding Without Changing their Form.

MANUFACTURED BY

### Brown & Sharpe Mfg. Co.,

Providence, R. I.



While improvements have been made in almost every other tool in common use, there seems to have been no change for the better in the construction of cutters for the teeth of gear wheels, which, as every machinist knows, are troublesome and expensive to make, and last but a short time, as they soon become dull and then require to be annealed, re-cut and hardened again, the cost of which is nearly equal to that of making new cutters, while the steel is liable to injury from repeated heating. To overcome these difficulties a cutter has been made as shown in the engraving, by constructing the teeth or blades in the form of segments or curvilinear sections that are mechanically accurate in outline and of equal size and contour throughout their entire length, each of which has a sufficient circumferential inclination with respect to the revolving circumference of the cutter to produce the proper degree of clearance, so that the teeth may be sharpened by grinding away its face until its strength is permanently impaired, and so that it will always present the same cutting contour, each new face and cutting edge produced by grinding being a fresh radial section of an equi-form tooth throughout its whole length. A cutter made on this plan will outlast many of the old form, with the advantage of being always ready for use. If, as frequently happens, the cutter becomes dull before a wheel is completed, it can be taken out, sharpened and returned to its place in a few moments without any risk of altering the form of the teeth to be cut.

### The "Royal" Fluting Machine.

The Perin & Gaff Manufacturing Company, Cincinnati, Ohio, have introduced a new fluting machine, the "Royal," herewith shown. Upon examination it will be found to have many points of novelty and merit. A table adjusted immediately opposite the lower roll enables the operator, while turning the rolls by use of the crank handle with the right hand, to flute the linen or other material with ease and regularity. The lever for lifting the upper roll is near the crank handle, the most convenient position, and by its use the brass rolls can be quickly opened and closed. The clamp adjustments are so perfectly arranged that the machine can be firmly placed in any position on the table. For beauty of design, simplicity of construction and operation, excellence of workmanship and finish it merits favorable notice.

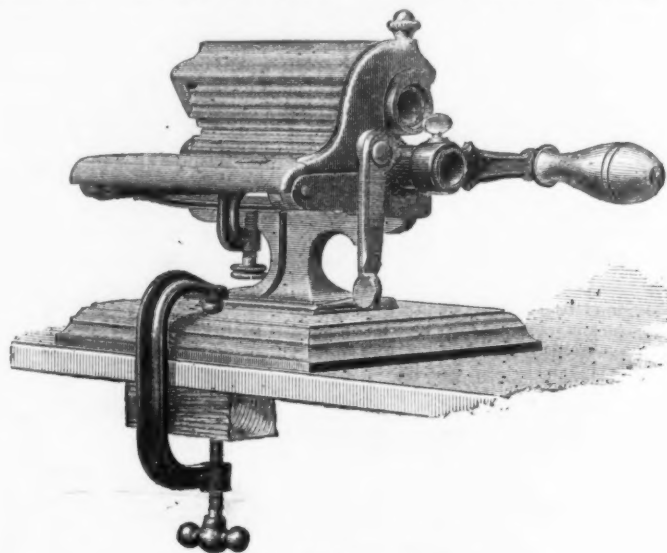
### The Iron Workers.—An Interesting Exchange of Views.

The National Association of the Iron and Steel Workers met at Columbus last week. There were about three hundred persons in attendance. Last Thursday night they had a banquet. General Sam Thomas, president of the Columbus Rolling Mill Company, presided. The speeches were interesting, and turned upon the questions now agitating the country. We copy from a letter to the Cincinnati Commercial the substance of the remarks:

General Thomas, president of the Rolling Mill Company, was chosen president amid no little cheering, and as he took the chair, with the president of the association to the right, he started off in a very happy little talk, acknowledging that they had captured

though not in its present form, for 20 years. It has taken a long time for the manufacturers to regard us, not as real or professed enemies, but as those that are trying to close up the breach that has existed between capital and labor for some time. If both capital and labor understand each other, and that what interests one interests the other, strikes would soon be a thing of the past. Each party ought to control its affairs, but in case of difference we should forget that we have different interests, and by mutual concessions come together. And we are regarded by some as Communists, and people have looked at my little badge as I walked along the street as though it had some dreadful significance. It is all a mistake. We met at this time because it was an appointment to meet at Columbus on the first Tuesday in August. One fact is kept constantly before our minds—that we have a common interest with our employers. We aim, of course, at a certain degree of power. If a cause is worth anything, it is worth that. We mean no warfare with any capital legitimately invested. The recent troubles with railroad men unfortunately reached other classes, and therefore our meetings are looked to with great interest. Our resolutions already published said just what we mean. We did sympathize with railroad men, did think the road should pay the 10 per cent, and recede from the other burdensome charges; but we thought when they burned railroad property, shed blood and lost sight of what was honorable, it was wrong. We condemn it. Why? Because it was wrong. It is justice and right to ourselves, to our families, to our employers, and to the community in which we live, that we quietly submit to the laws as good citizens."

Mr. Bishop concluded by expressing the



THE "ROYAL" FLUTING MACHINE.

him. Said he: "We are in the minority here, and you might organize a strike the first thing we know. In these times and a little before the elections you will be very likely to be approached by men anxious to display their horny hands and tell how much labor they have done. I am not of that sort. To tell the truth I never did do an honest day's labor in my life. Yes I did once try hoeing corn a couple of days, but the fact is, it didn't agree with me, and I threw the hoe away and have hated corn ever since. But now you have put me up here, I am going to say something. Possibly you will not agree with me. It is this, we are now on the eve of the greatest discussion involving our material interests that we have ever known. Now, pending such a discussion, involving as it does your interests and our interests, you have need to avoid those frauds, cheats and skunks that are no more laboring men than I am. You must have complete control of your side. We must have complete control of our side. I have always been in favor of meeting rolling mill men fairly. You can coax rolling mill boys a great deal easier than you can drive them. In the discussions that must come, keep your affairs in the hands of old men and out of the hands of eighteen-year-old boys. Let your very best men have charge of your lodges. I tell you I don't sympathize much with your talk about compensation. My sympathy is with men a great deal lower than you. How the man on a dollar or a dollar and a quarter a day supports a family I can't tell. He has my profound sympathy. Remember you are an aristocracy above him. Look out how you treat him."

"I am glad to see you discussing these questions. Business men recognize that you have the same right to do so as they. You should remember, too, that these are peculiar times. You have a right to hold your meetings now, but it is a time when indiscreet men have inflamed the public mind. It will be found, however, that out of discussion the right will come. The American people discuss questions as they arise, and in the end they take the course that gives the greatest good to the greatest number."

General Thomas was applauded at almost every sentence, and at the close of his remarks loud calls were made for Mr. Joseph Bishop, of Pittsburgh, president of the association, to respond, which he did, as follows. After making profound acknowledgements for the reception given himself and associates here in Columbus, he said:

"I was so deeply interested in what General Thomas said that I hoped he would keep on. I know that you will agree with me that it is the most interesting speech that we have heard this week. It is encouraging to meet with men like him, and to know that they feel that we have an interest in each other. And we see now why we never heard of anything but harmony at the Columbus Rail Mill, and harmony is the great principle of our organization. If we are earnest and sincere we shall win the respect of our employers, to which we think we are entitled. We must, brothers, do right. We must recognize the fact that difficulties are best settled by meeting and consulting, without resorting to strikes. Our organization has existed,

hope that delegates returning to their mills and their lodges would remember that there exists in Columbus a feeling between manufacturers and men such as he did not think existed anywhere else in Ohio. The principles of right-doing to our employers will bring this about and impress them with the fact that their interest is our interest.

His remarks were emphasized by frequent bursts of approbation from his hearers.

The superintendent of the Columbus Rolling Mill, Mr. Christopher Lewis, was the next victim marked for a speech. He allowed the applause which greeted his appearance to subside, and then said: "I have been listening here and am almost lost, wondering at the position I occupy, as I look back a few years. I was engaged in the first rail mill built in this country. That was at Danville, Pennsylvania. What a rapid advance in labor from that day to this! It is my view that the best thing about a rolling mill is education. Thirty years ago it was almost impossible, in Pittsburgh, to tell any day when a strike might occur. Strikes were brought about for the most trifling causes—all for want of a proper appreciation of themselves by the men. A great deal of fault is with employers. Much of the antagonism between employers and employees is without a bit of reason. I hold that employers and employees are entitled to equal respect. There is no more reason for a laboring man to humble himself to the man who buys his labor than for one storekeeper to humble himself to another."

"There is a great difference in the quality of rolling-mill hands. Some take care of the employers' interests as though they were their own; others have no such pride. It is the last class that produces strikes. The difference is a result of education. That is the reason we have had no strike in the Columbus Rolling Mill for five years. Nineteen of the strikes in the country are brought about by 'mediators,' men who come between workmen and their employers. Then, so many managers and superintendents want to be looked up to as gods. The man who does his work well is entitled to the highest respect. I consider that education is wanted not only of workers in rolling mills, but of men who oversee workmen. It should be known that it is to the interest of the company to keep men who care for their work, rather than to take green hands, who go in when there is a strike and take lower wages. Companies don't know it; employers don't know it; as a general rule superintendents don't know it. I have seen in every mill I ever worked in that it is better to pay a good man well than to have a dozen men around for nothing. Then I believe there should be a system of arbitration. Some men in charge of rolling mills are so pig-headed that they won't allow anybody to say they are wrong. If they know so much more than the working classes, how easy to convince them, and not stand back like Tom Scott and say, 'Not a wheel turn.' He knew Colonel Scott, and liked him, but his friends would have thought better of him if he had invited a conference and shown the men from the books of the company that they could not afford more pay, and the men would have submitted, we believe."



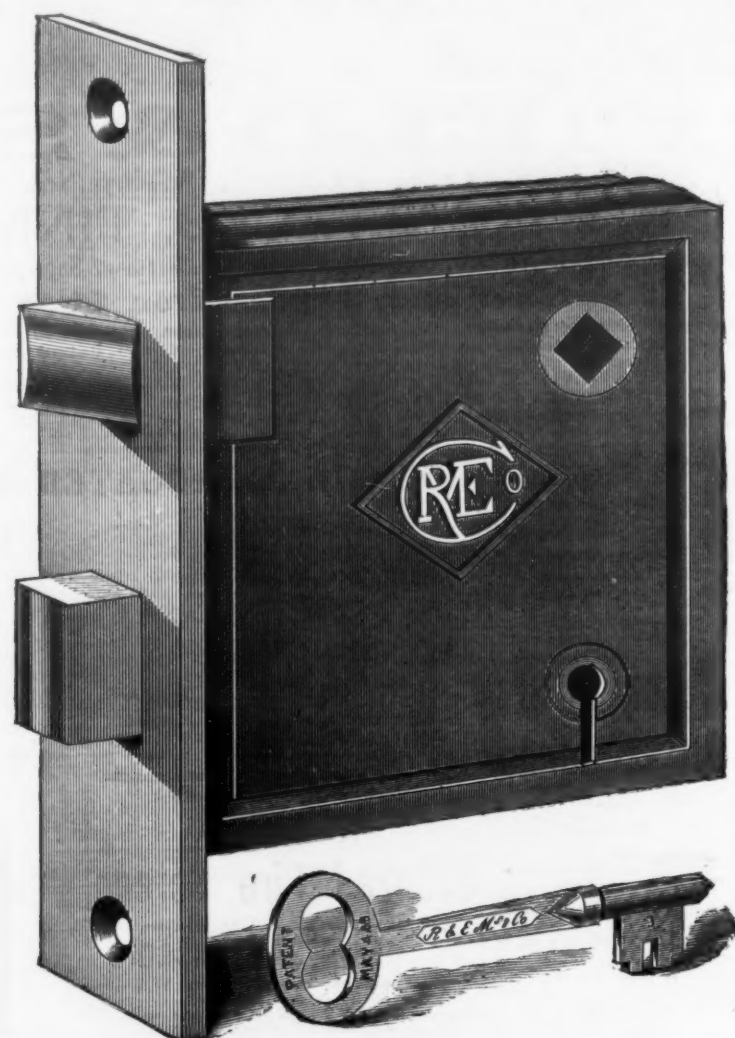
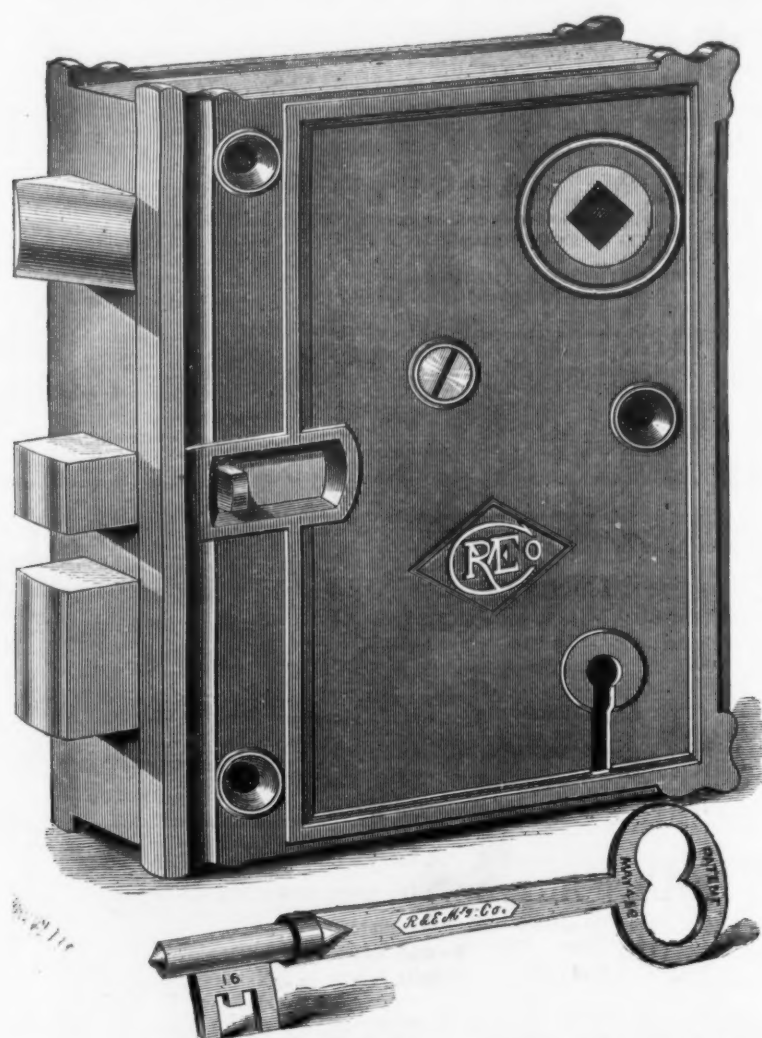
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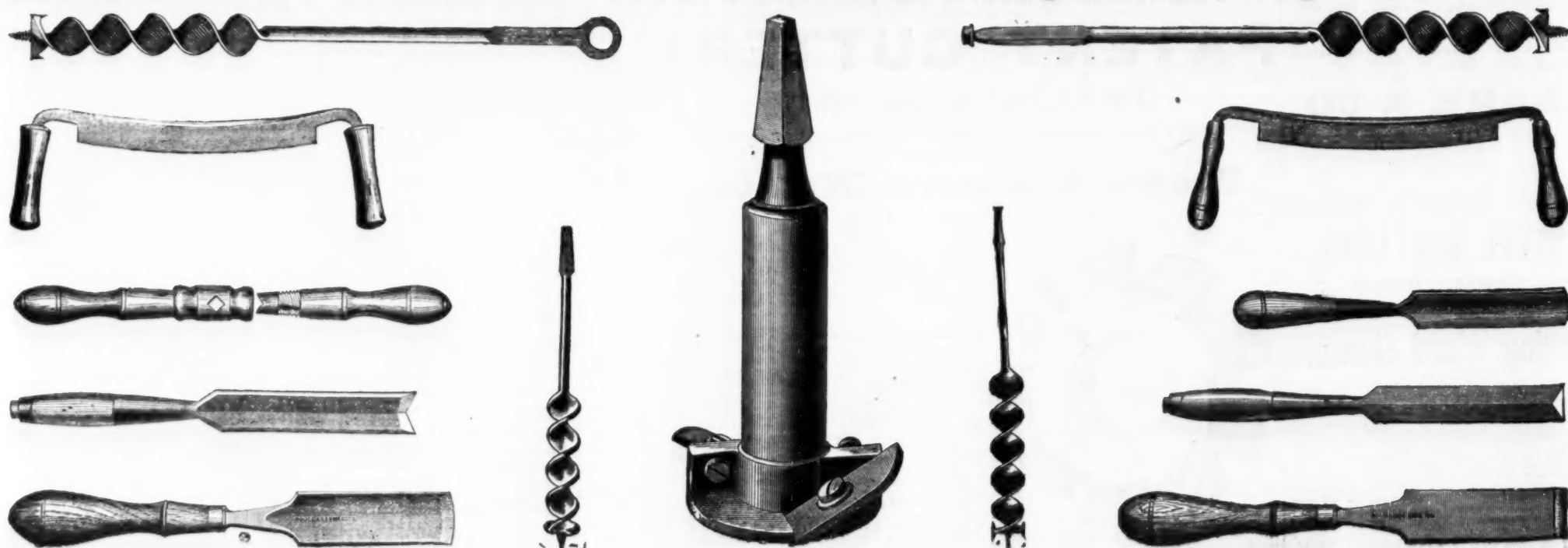
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American Agricultural Implements in England.

Iron, in an article on the Royal Agricultural Show, says:

The large quantity of American agricultural machinery and implements shown at Liverpool suggests that, perhaps, our own home makers were hardly wise in ignoring the Philadelphia Exhibition so completely as they saw fit to do. They had, of course, as all good men of business have, their reasons, and on the surface these were good reasons enough. The heavy American tariff had at last made business with America impossible. The great expense of transporting machinery appeared formidable when not softened by the hope of possible orders; and again it was supposed to be impolitic to expose inventions for six months to the keen eyes of American machinists. The first two of these arguments for staying at home may be sound, but the last is rather amusing than convincing. Owing to many circumstances, notably the large size of cornfields in the United States and the high value of labor there until within the last two years, the American cultivator has been prompt to employ labor-saving machinery. The work of reaping and thrashing could not have been got through by manual labor alone, even in the days when men "out West" burnt corn cobs for fuel, because it was cheaper to burn food than to fetch wood or coal from afar. The produce of a farm of 5000 acres absolutely required machinery, and American ingenuity supplied it. As America then led the van in this species of invention, it savors of puerility to fear to expose our latest improvements to the searching gaze of her machinists. Trade secrets and mystery-mongering are, in fact, out of date. It was once all very well for the reigning powers at the Meissen Porcelain Manufactory to engage workmen for life, and for Compton to work his spinning-mule in an attic; but the same fierce light which beats about a throne is now directed upon every department of industry. If an American manufacturer cared to copy the work of an English maker, or an English maker to copy the work of an American, he could easily buy a specimen, and, what is more, the workmen to construct it. Now that the "solidarity" of labor, as it is called, has been preached by the International and kindred societies, it would be hopeless, and, indeed, unreasonable, to expect that any feeling of loyalty would prevent a workman from doubling his wages at the expense of his previous employer's so-called secret. The mistake made by English makers in not putting in an appearance at Philadelphia was in not recognizing that the world is wider than England and the United States. To Philadelphia came people of all nations and languages, eager for information, especially from those great South American countries which appear destined to play a great part as the food producers of the world. An opportunity of making manifest the quality of English agricultural machinery to the representatives of Brazil and the River Plate has been lost by the suspicious supineness of our manufacturers, and their United States rivals will not be slow to improve the advantage they have secured. Even the Canadian manufacturers, handy as they were to the scene of action, showed much unwillingness to compete at Fairmount Park, and their reluctance was only overcome by the offer, on the part of the Canadian government, of a large number of special medals of different values, the adjudication of which was confided to English judges. Hence that creditable display of the Canadian exhibitors at Philadelphia which inspires regret that our home makers should, by considerations of expense and feelings of jealousy, have been prevented from taking their part, as they could have taken it, at the American Exhibition last year. In one department they might have shone almost alone. According to Mr. John Coleman's Report on Agricultural Machinery shown at the International Exhibition at Philadelphia, 1876, neither American nor Canadian agriculture has yet adopted the steam culture so familiar to English fields. This is most remarkable when the vast area of many of the American farms, together with the flat character of the prairies, is considered. Possibly the superficial character of cultivating operations, the moderate price of horses and mules and the general prevalence of light land, may have conducted to this indifference; but there is little doubt that the time is coming in the States for steam culture, pursued with engines adapted to the consumption of such rough fuel as may be locally available. A few English traction engines and thrashing machines were shown and proved valuable in trials and the preliminary work of the exhibition; but there is no doubt that England was inadequately represented in this important department. In the case of reapers and binders, and automatic binders, the Americans had Philadelphia very much to themselves—and as much may be said of table rakes—although in the Russian department were two machines of peculiar construction, apparently much behind the best American models.

The Abendroth & Root Mfg. Co., of Greenpoint, L. I.—New York office, 28 Cliff street—have just started to do general galvanizing in connection with their other business. They claim to have made great improvements in this branch of metal working, and are prepared to turn out the best description of work in this line. They are very busy with their spiral pipe and other specialties, and are running full of work on large contracts for 10, 11 and 12-inch heavy spiral flanged pipe, &c., for hydraulic mining and pump suction. They are fully settled in their new shops, which are among the most complete and extensive in the country.

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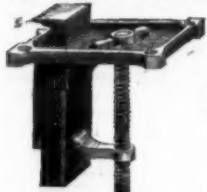
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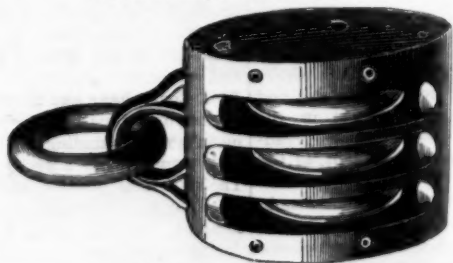
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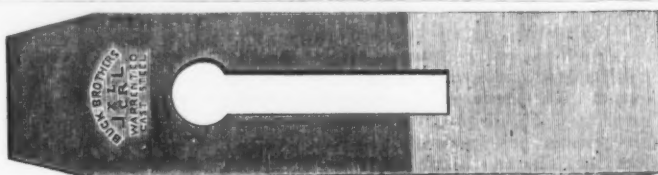
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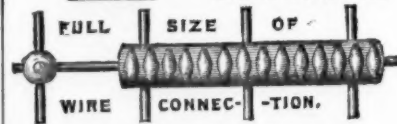
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JAMES C. BAYLES, Editor.  
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## Railway Management and the Public Interest.

One of the significant facts in connection with the labor disturbances was that the sympathies of the cities on the lines of the trunk roads were not with the railway companies. We do not mean the terminal points on the seaboard, but the large interior cities, such as Chicago, St. Louis, Indianapolis, Cincinnati and notably Pittsburgh. The knowledge of this fact gave a momentum to the strike at its inception, and it was a misunderstanding of this sympathy and the limits to which it would follow them that led many of the rioters to the excesses which resulted in the forcible suppression of the movement. In Pittsburgh this sympathy was especially manifest, and it was currently reported that proffers of assistance in the way of food and money had been made to the strikers by the citizens. These rumors were afterward shown to have been without foundation, but that they were started and for a while firmly believed shows something of the state of feeling. It may not be out of place to say just here that the feeling of Pittsburgh has been very much misunderstood. The people of that city had no sympathy with the acts of the mob, and the excesses at Pittsburgh scared the rioters in other cities and led to organization of the citizens for the protection of life and property.

The reason for this lack of sympathy for the railroads is doubtless found in the policy of the roads in the matter of freights to and from these points. It will be remembered what an indignant protest went up from the merchants of New York when it was found that freight was being shipped from Liverpool to Chicago as low as from Liverpool to New York, and in some cases lower. Philadelphia will remember the bitter complaints of a few months ago over the fact that rates from Philadelphia to New York on iron were not *pro rata* with those on iron from Harrisburgh. Nearly every city has had like grievances, some of them for years. For example, Pittsburgh's tonnage is said to be as large as that of any city in the United States, if not larger. Chicago is also an enormous freight center, with her trade in breadstuffs and provisions. These cities claim that they should have a *pro rata* tariff with the most favored points. If the rate on iron or flour or grain is 50 cents from Chicago to New York, and Pittsburgh is half way, Pittsburgh insists that the rate from that point should be 25 cents to New York, and in proportion to other points. It has not been, however, and though the Pittsburgh merchants have petitioned and remonstrated, little heed has been given to their representations. When the hour of the railroad's calamity came it is no wonder they mocked.

The ill feeling toward the railroads, which finds expression in so many ways, grows out of the policy of management based upon a mistaken notion. A railroad corporation is a creature of the State. It is granted certain privileges and rights of great value to enable it to better serve the public. When under its charter its line is built and equipped it becomes a common carrier, and never can have any legitimate object except to serve the public. As the rule, however, the managers of our railroads regard their franchises and charter privileges very much as the feudal barons regarded real and personal property acquired by conquest from weaker neighbors. Once in possession of a line of railway the interests of the company are paramount, and the public have no recognized rights which the managers consider themselves bound to respect. They fear nothing and respect nothing save competition. When this exists they are the humble, obliging servants of the public; when it does not exist they are intolerant and oppressive, exacting the highest rates the public will pay, and refusing to listen to any suggestions which are not enforced by something tangible in the shape of a menace of a diversion of traffic. This is all wrong. It has already resulted in multiplying railroad facilities in advance of the requirements of commerce, and in forcing the people of many sections to build two roads to carry a traffic barely sufficient for the profitable employment of one. There are, of course, many important points not now enjoying the advantages of competition, and how long these cities will be willing to submit to the arbitrary policy from which they now suffer depends upon the public spirit of their citizens and the nature of the conditions which favor or discourage the building of new roads to connect with other trunk lines. Thus by a mistaken policy the railroads are in many instances inviting the only thing they have reason to fear and which, when it comes, will leave them practically helpless and in the position of defeated public enemies.

We do not imagine that it is possible for any railroad company to give the shippers depending on it a *pro rata* tariff which shall satisfy everybody. The managers of a railroad, however, should remember that they are created a corporation to serve the public, and that they are fulfilling the object of their corporate existence in proportion as they study intelligently to promote the public interest. No doubt they are asked to do a great many unreasonable and improper things, and that it is right and necessary to refuse a majority of the requests made of them; but when the business men of a city agree that the welfare of their city demands some modification of a tariff of freights or

some change in a system of management, they are not likely to be mistaken, and their requests should at least be fully and intelligently considered, and if possible granted. In any case, the managers of railroads should not only feel that it is their function to serve the public to the best of their ability, but they should manifest some regard for the interest depending for success upon the facilities they offer. It is as easy to make friends as to make enemies at the outset, but when public enmity is once aroused it is not easily allayed. Most of the trunk lines and many of the local lines have put themselves in a position of hostility to the public, and as the consequence have had to contend with the difficulty of adverse legislation, and with a hostile public spirit which is not without influence in the courts. So serious has this become in some parts of the country, that it is already taking the shape of a clamor for protection from Congress, and the transfer of the railroads to the national government would not be an unpopular plank in party platforms in many of our Western States. Unfortunately as this may be, and we have already given our ideas on this point in previous issues, it is the natural result of the mistake of our railroad managers in losing sight of the fact that they are public servants and not rulers of the land. Their own interest and that of the stockholders whose invested millions are in their keeping, demand a closer regard for the public welfare, and the events of the late strike show them the value of public sympathy.

## Wages and Earnings.

The debris of the late whirlwind is being rapidly cleared away, and we are getting into a position from which we can estimate approximately what its effects have been. One point is probably settled for the present, at least—the reduction in the wages of labor has reached its lowest point. Whatever may be the result of the demand for increased compensation or the restoration of late reductions, it would be a bold step in a wrong direction to give notice of a decrease in the wages. From this we reach the rational conclusion that the prices of manufactures have also touched bottom. Even now it is impossible to produce goods at current market prices. Competition and the financial needs of manufacturers have forced sales at whatever could be obtained, and these causes may still operate for a while to keep prices down; but the attempt of manufacturers has not been to get cost for their goods by compelling the consumer to pay a fair price for them, but by taking it off the wages of labor. We know all about the relation of demand and supply, but to meet the point with this argument is merely to utter a platitude. Labor asks for bread, and we cannot satisfy this reasonable demand with good advice. We do not mean that many of the demands of labor are not unreasonable, but we do say that all the reduction on iron or nails or glass should not come from the wages of workingmen. Labor should bear its part, but not the whole burden. Some classes of labor have been asked to bear more than a fair part.

Another point that the strike has made manifest is that the earnings of capital must be reduced for the present. The fault of the Baltimore and Ohio road was that they did not recognize this. They tried to pay 10 per cent. dividends at the same time that they reduced their men's wages and cut down their work. The record of the Pennsylvania road was in commendable contrast with this. In this case the relation of the reduction in the earnings of capital to the reduction in the wages of labor was as two to one, and the conditions of service were such that the monthly earnings of the men were nearly double those of train hands employed on the Baltimore and Ohio road. The strike has been useful in hastening a readjustment of the burdens of hard times and general depression, and capital cannot longer refuse to bear its full share of the shrinkage of values.

## The Basis of Our Export Trade.

At no previous time within the recollection of the present generation of business men has it been so universally acknowledged that we should stimulate our export trade and create new outlets for our manufactures and products. In order to do so we require frequent shipping opportunities, whether sail or steam. A large crop of cereals like that of this year necessarily increases our business relations, not only with Europe, but with Spanish America, Brazil and other colonial countries. American flour and corn are in general demand, and many countries want them in large quantities. These have at all times formed the basis of our trade with those countries except where, as in the Spanish colonies, a discriminating duty hampers the traffic in American flour, or where, as in Chili, they are themselves exporters of cereals. California crops being short this year, the shippers of the Atlantic coast will have to supply China and other countries on the Pacific in competition with Chili and Australia. Most of the medium-sized vessels leaving our ports for colonial countries are chartered to take the bulk of their cargoes in the shape of breadstuffs, and require other goods to fill up. Several vessels simultaneously on the berth for any one of those places, offer us cheap freights

through the competition for goods to complete cargoes. The same thing will be observed elsewhere. The basis of England's export trade has hitherto mostly been coal, on account of its bulk and cheapness. The rapidly increasing magnitude of the British coal export the following figures will show:

Year.	Tons.	Value.
1867.....	10,415,778	\$5,392,452
1868.....	10,837,804	5,352,525
1869.....	10,388,425	5,067,790
1870.....	11,405,028	5,505,899
1871.....	12,747,989	6,246,133
1872.....	13,198,494	10,442,321
1873.....	12,634,333	13,205,618
1874.....	13,077,205	11,984,621
1875.....	14,544,916	9,658,088
1876.....	16,265,839	8,901,716

France has an export basis in wine, Spain in wine and fruit, Italy in marble, rags and fruit, Scandinavia in Lumber, and finally, our own country in breadstuffs and cotton. Spain, and at times Trieste, have always been our competitors, so far as flour is concerned, in Cuba, Porto Rico, Brazil, and the Argentine Republic, except in periods when there was a notable deficiency in Europe, as this year in consequence of the Eastern war. Between the short crop in California and the lack of a supply from Southern Europe, the Atlantic States will therefore be called upon to ship largely to the countries between the tropics which import breadstuffs. This being the case, it will be of interest to examine which, from among those countries, are the principal consumers of our breadstuffs. In normal times, as the fiscal year 1875-1876, they took as follows: 2,202,469 barrels of American flour, 1,360,123 bushels of corn and 11,462,000 pounds of biscuit. It is fair to presume that during the current fiscal year they will, so far as their intercourse with the Atlantic States is concerned, take considerably more than usual. Whenever there is an absolute dearth, the duty on foreign flour, even in the Spanish colonies, is reduced—temporarily, it is true, but yet to a sufficient extent to add considerably to our sales of flour, &c., in that direction. Our exports last year to countries other than European were as follows:

## EXPORT OF BREADSTUFFS TO NON-EUROPEAN COUNTRIES DURING THE FISCAL YEAR 1875-1876.

	Flour and Meal, Bbls.	Corn, Oats, &c., Bush.	Biscuit, 1000 lb.
To Mexico and Central America.....	15,048	93,487	122
Total.....	74,173	93,487	122
To West Indies.....	66,531	586,573	59
Cuba.....	55,833	2,363	429
Porto Rico.....	570,287	408,060	6,548
French.....	81,280	47,338	305
Danish.....	70,879	.....	.....
Dutch.....	47,655	27,979	218
Haiti and St. Domingo.....	186,273	.....	994
Total.....	1,109,438	1,072,913	7,913
To South America.....	3,550	.....	.....
Argentine Republic.....	338,180	45,163	222
Brazil.....	2,384	.....	.....
Chili.....	11,329	35,000	.....
Peru.....	44,939	.....	201
Colombia.....	17,160	.....	.....
Venezuela.....	108,368	46,377	279
French Guiana.....	7,684	34,450	408
British.....	105,253	7,252	1,341
Total.....	836,846	168,242	2,721
Total to Central and S. America and West Indies, &c.....	2,018,457	1,334,642	10,756
To Asia, Africa, &c.....	.....	.....	.....
China.....	137,954	.....	.....
Cape of Good Hope.....	3,373	.....	329
Japan.....	9,181	.....	.....
India.....	2,789	.....	.....
Azores.....	7,327	20,947	218
Sandwich Islands.....	11,076	4,534	159
Centra.....	1,912	.....	.....
Philippine and Canary Islands.....	10,400	.....	.....
Total.....	184,012	25,481	706
Grand total.....	3,002,469	1,360,123	11,462

The foregoing table shows that the British West Indies and Guiana, Brazil, Haiti and St. Domingo, Venezuela and China import the largest amounts, and Cuba and Porto Rico, with which colonies we do the most extensive business in every other respect, comparatively little. The following were the respective values representing this movement:

	Value.
To Mexico.....	\$208,994
Central America.....	349,639
Cuba.....	1,320,419
Porto Rico.....	384,051
British West Indies.....	3,916,941
French.....	633,636
Danish.....	399,996
Dutch.....	325,077
Haiti and St. Domingo.....	1,326,016
Argentine Republic.....	33,746
Brazil.....	3,939,951
Chili.....	11,605
Peru.....	64,578
Colombia.....	311,034
Venezuela.....	126,240
French Guiana.....	774,036
British Guiana.....	64,104
British Guiana.....	706,792
Total.....	\$14,877,935
To China.....	\$747,324
The Cape.....	60,239
Japan.....	56,244
Liberia.....	20,315
The Azores.....	80,281
Sandwich Islands.....	76,632
Centra.....	13,356
Philippine and Canary Islands.....	59,000
Total.....	\$1,113,391
Total.....	\$15,991,326

The general export movement in breadstuffs leaving our shores and frontiers was the following:

	Value.
Barley.....	\$210,586
Biscuit.....	632,580
Indian corn.....	33,265,980
Corn meal.....	4,305,027
Oats.....	588,583
Rye.....	480,083
Rye flour.....	39,054
Wheat.....	68,382,899
Flour.....	24,433,470
Starch, &c.....	1,843,393
Total.....	\$131,121,555

It will be seen that the colonial countries above named took 12 per cent. of the whole. Our entire export of goods, domestic and foreign, having been \$550,892,234 in the same year, it will be observed that breadstuffs constituted about 24 per cent. of the whole.

Great Britain's export of merchandise in 1875 amounted to \$1,408,050,000, gold, of which \$48,290,440 consisted of the one article coal, being a percentage of but 3½ per cent. in value, but representing in bulk 14,544,916 tons. It is the bulk, cheapness and salableness of coal which facilitate British

exportation all over the globe. The day may not be distant when our bituminous coal will also greatly facilitate our foreign business relations; meanwhile the bulk, comparative cheapness and great salableness of our breadstuffs are our main reliance. This being the case, the abundance of our this year's crop will, as we have shown, contribute very materially toward the development of our export trade in manufactures.

## The Metallurgical Review.

We call attention to the advertisement of *The Metallurgical Review*, on the opposite page. That this is the first announcement of the latest and most important of recent additions to periodical literature, will not surprise those who know us, as we are not in the habit of proclaiming our intentions in advance of carrying them into execution.

We have only room at this time to say that *The Metallurgical Review* is a necessary outgrowth of *The Iron Age*, which it will ably supplement. The two are under the same management, and the good judgment and honesty of purpose which have placed and kept *The Iron Age* at the head of its class of journalism, will be devoted to making *The Metallurgical Review* a magazine of exceptional scientific interest and practical value.

## The Decline in Copper.

The sudden break in the copper market during the early part of this month has given rise to a good deal of comment in the metal trade as well as in banking circles. Recent statistics throw no little light upon the subject, and therefore deserve considerable attention.

During the latter part of June we made the following statistical statement of the situation in this country:

	Pounds.	Pounds.
Stock Jan. 1, 1877.....	8,000,000	.....
Lake Superior production for 1877 estimated at.....	36,000,000	41,000,000
Output at Baltimore.....	5,000,000	.....
Supply.....	.....	49,000,000
Home consumption 12 months at 2,500,000 lbs. per month.....	30,000,000	.....
For the manufacture of cartridges for export.....	7,000,000	.....
Contracted for export.....	8,000,000	45,000,000
Estimated stock Dec. 31, 1877.....	.....	4,000,000

In regard to this we said that, should home consumption not reach our estimate, the stock at the end of the year would be that much larger, unless there should be toward the fall further sales for export. In this respect, we stated, that, in all likelihood, the Continent would be induced to send out some further orders for our copper.

Since then the demand for copper on the part of our manufacturers has slackened considerably, especially since the late strikes, which, though short-lived, made an unfavorable impression not yet wholly removed. Fresh orders from Europe were not received. Copper consumers in France, usually quite willing to buy here at a reasonable figure, were held in check by the disquieting state of politics over there, and in view of both the industrial stagnation here and the lack of a further foreign outlet, some of our mining companies became restless and precipitately threw on to the market not only their present but their prospective output to the close of the year. Hence the unexpected break of the market. We do not despair, however, of seeing Europeans enter our market again for large lots of copper. This they will probably do after they receive mail advice instead of the confused and meager cable dispatches, and have the leisure to examine the real state of affairs, which seems to us by no means discouraging.

The demand for export at the lower prices ruling for some time past, is much larger now than in former years, and the war in the East, creating a demand for cartridges, &c., rather tends to stimulate it. Stocks of brass goods have decreased very much in the hands of consumers, and the outlook is consequently more encouraging than otherwise.

That copper is really low at present the following figures will show:

PRICE OF LAKE SUPERIOR COPPER AT NEW YORK.					
Highest. Lowest.			Highest. Lowest.		
1867.....	29½	23	1872.....	45	27½
1868.....	24½	23½	1873.....	35	24½
1869.....	27	22	1874.....	25	21
1870.....	23½	19½	1875.....	23½	21½
1871.....	27½	21½	1876.....	23	19½

1877.  
January..... 19½  
February..... 20  
March..... 19½  
April..... 19½  
May..... 19½

In the copper market, as is the case with other staple articles when a very heavy decline occurs, a panic spreads and people fear to invest. In the present case we think that consumers are unreasonably timid. Possibly before long some combination will alter the whole aspect of the market, and it may be that many of those who have feared to purchase will repent that they omitted to do so at the present unusually low figures.

In Europe the general dullness of trade and rather free shipments of copper on the West Coast, have had the effect since January 1st, of gradually lowering the price of the metal notwithstanding the good demand for and comparative scarcity of Australian. The statistical position will be best understood by a comparison with former years. Leaving out the 1120 tons afloat from Australia, advised by mail, and the 3900 tons afloat from Chili, advised per cable, it will be found that the visible supply in England and France on the 1st inst. was 34,963 tons, the price of Chili bars being £69. In



previous years it was, on August 1, as follows:

	Tons.	Price.
1876.....	31,803	272
1875.....	29,704	79
1874.....	30,621	81
1873.....	39,279	103
1872.....	37,733	

The stock in England Aug. 1, 1877, consisted of 16,884 tons, and at Havre of 8420; together, 25,304, against August 1, 1876, stock in England, 13,942, and in Havre, 5850; together, 19,792.

Although at this time of the year the stock and amounts afloat were heavier in 1873 and 1872, the subsequent panic of 1873 greatly subdued speculation in copper, and the metal, lacking a well sustained artificial support ever since, has been subject to the legitimate influence of the supply and demand almost exclusively, and under this influence the price has gradually given way to a point which, to judge from present steadiness, seems to inspire confidence, notwithstanding the large amounts still being shipped from Chili.

#### THE ENGLISH TRADE MOVEMENT IN ORES AND COPPER.

	12 Months.	First 6 Months.
Import.	Tons.	Tons.
Ore.....	75,370	38,940
Copper.....	38,840	19,420
Regulus.....	39,200	19,600
Copper.....	39,200	19,600
Reduced to Pure Copper.		
	72,463	36,460
Export.		
Copper and its manufactures.	52,925	26,463
Surplus Retained.		
	19,537	12,997

It will be seen that while the import during the first six months of the year has been heavy, the export has also been larger than usual.

#### American Hardware Abroad.

Reports from Australia and New Zealand show that American hardware is steadily making its way in those markets. The most curious feature of the new trade, however, is found in the fact that English manufacturers for those markets are required to use American materials. The *Ironmonger* says: "English merchants are being required by buyers in Sydney to supply American-made steel, which the buyers intimate possesses, in their belief, some advantages over that of Sheffield. The Americans have clearly 'not pushed business, whether at the Antipodes or in England, in vain. They have reason to be encouraged by what they have done. That they have this view themselves would seem to be inferable from the statement now to hand that Philadelphia merchants are moving to introduce manufactured goods of that city and State into Great Britain, by the establishment of 'headquarters in a number of leading towns in the kingdom. The first shipment of goods is about to be dispatched. This will have the effect of inducing the commercial men of New York and other cities to move in a similar manner. And as we write the information reaches us that the representative of a large American saddlery and harness house has just been in 'Walsall with samples of superior goods, and has succeeded in obtaining a number of orders. Such an event in the very capital of saddlery and harness should indeed put manufacturers on the alert.'"

From this we may learn one very important fact. The profit and large development of our export trade in manufactures must depend upon our ability to gain and retain a reputation for superior quality and general excellence. If it comes to a question of cheapness merely, American goods cannot compete with "Brummagem." We do not want that kind of trade; but a hold on foreign markets based upon the reputation of our manufactures for general excellence of design and finish, cannot be shaken by competition in the matter of price. The difference in any case is not so great as to present a serious obstacle to American exporters, since quality always asserts itself over cheapness.

The strikers who interfered with the running of the Central Railroad of New Jersey have come to grief in a way they least expected—for contempt of court. Their trial was concluded before Vice-Chancellor Van Fleet, at Newark, on Saturday. In reviewing the case the Vice-Chancellor said that the boldest ruffian in a mob would not have dared to forbid a train from leaving the depot, had he not known that he had the support of the strong arms of those who stood behind him, and whose mouthpiece he was. The court then sentenced Edward Knott, James Schwartz, James Matthews and Albert Snyder to pay a fine of \$150 each, and be committed to the Warren county jail until further notice from the court. Garrecht was sentenced to the Somerset county jail until the further pleasure of the court. The case of George Shine was adjourned until next Monday. McGovern and Durling were discharged for want of proof against them. The prisoners were deeply affected.

A locomotive of peculiar style has been placed upon the Hudson River Railroad for the exclusive use of the superintendent, Mr. J. M. Toucey. It is only about half the size of the ordinary locomotive, and has the engine and tender built together on one frame. The peculiar feature of the new machine is that it has a cow-catcher on both ends and draws no cars, the cab, which cov-

ers the entire boiler, being divided into two apartments, one for the engineer and fireman, and the other (in front and directly over the boiler) is fitted up with upholstered seats for the use of the superintendent and those who accompany him. There are only two drive wheels, one on each side, and the machine is kept in the round house with steam constantly up, although she sometimes runs out only once or twice in a month. Her name is Monitor. The smokestack, being of the size of an ordinary stove pipe and almost entirely boxed up, is scarcely visible. The bell is placed under the lantern in front.

#### Transactions Based on Confederate Currency.

The following decision has been rendered by the Supreme Court of the United States: No. 239—William D. Stewart, Administrator, &c., et al., Appellants, vs. Ezekiel Salamon et al.—Appeal from the Circuit Court of the United States for the Southern District of Georgia.—This case is brought to foreclose a mortgage executed by one James Stewart, now deceased, upon certain real property situated in the State of Georgia, to secure his promissory note for \$44,000, and for the sale of the mortgaged premises to pay the amount due thereon. It does not differ from ordinary suits of foreclosure in equity, except in making tenants of the property parties to prevent them, pending the litigation, from paying over rents to the administrator or to the heirs of the deceased, among whom, it is alleged, the administrator has unlawfully partitioned the premises. The note of Stewart bears date on the 8th of January, 1863, and is payable to the order of Allan S. Cutts, in 12 months after date, with interest. It was made for the accommodation of Cutts, who indorsed it to Mordecai, to whom also the mortgage was executed, upon the purchase of certain bonds of the Georgia and Pensacola Railroad Company. In March, 1866, \$15,325 were credited upon the note. Subsequently the note and mortgage were assigned to the complainants. The point of contention is whether the note was originally solvable in Confederate currency or in the legal currency of the United States. The Circuit Court must have held that it was solvable in legal currency, and was so intended by the parties, for its decree is in this respect we think the court erred. It seems to us that the evidence abundantly justifies the conclusion that the transaction, for which the note was in part given, was in Confederate currency. At the time the railroad bonds were purchased, January 6, 1863, the treasury notes of the Confederate government constituted the principal currency of Georgia in which business transactions were conducted. It was to them that reference was always made when dollars were mentioned, unless coin was specified. This condition of things appearing, the presumption is that in the purchase of the railroad bonds the parties had these notes in contemplation. And the testimony of Cutts and of others cognizant of the transaction, except Mordecai, is positive that such was the case. The conceded facts respecting the transaction lead to the same conclusion. The value of the bonds was estimated at the time in Confederate money; they were sold for eighty cents on the dollar in that currency. The cash payment of over \$12,000 was in the same currency. The \$50,000 note given at the time was paid a few months afterward in that currency. It is highly improvable that an exceptional distinction was made with reference to the balance for which the note of Stewart was executed. Certainly the presumption is strong the other way. The transaction and the testimony together leave no doubt on our minds on the subject.

The sum, therefore, in actual money, which the note of Stewart represented, and which he promised to pay, must be determined by the value in coin or legal currency of the United States at the time the note was made, and at the place where it was made, of Confederate treasury notes, equal in nominal amount to the number of dollars specified. And as the payment is indorsed on the note in the same monetary terms which are used in the note itself, the presumption is that the payment was intended to be credited in the same scale of values. If the parties intended otherwise, some proof on the subject should have been presented. The credit was made without any explanation, and there is no evidence that the value of the dollars mentioned in the receipt was different from the value of the dollars mentioned in the note. As the matter is presented to us, the principal designated on the face of the note is only reduced to the amount specified in the receipt. The true rule, therefore, for ascertaining the rights of the parties in the case is to calculate the interest on the principal of the note up to the time of the payment, and having then deducted the payment, to treat the balance as the debt there due; the amount in money to be determined by the value in Georgia of Confederate notes in coin or the legal currency of the United States at the time the note was made. Interest should be calculated on this balance to the date of the decree. The note with interest amounted, when the payment was made, to \$53,787; the credit of \$15,325 reduced it to \$38,462. This amount scaled by the value of Confederate currency in Georgia, at the date of the note—three to one—would make a balance due in lawful money, March 17, 1866, of \$115,386. This amount with interest will constitute the sum which should be adjudged due, and for its payment the proceeds of the mortgaged premises when sold should be applied. Reversed. Mr. Justice Field delivered the opinion.

#### Special Notices.

#### NOTICE.

PHILADELPHIA, April 2, 1877.  
On and after April 30th the Shipping Agency of The Pennsylvania Warehousing and Safe Deposit Co., at Perth Amboy, New Jersey, will be discontinued.  
B. K. JAMISON, Vice President.

#### \* Special Notices.

#### Just Issued.

### THE METALLURGICAL REVIEW.

Published Monthly by

DAVID WILLIAMS,

83 Reade St., New York.

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77 Fourth Ave., Pittsburgh, Pa.

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#### PROSPECTUS.

It is evident to all who are well informed as to the state of the metallurgical industries of the world, that we have fairly entered upon an era of exceptionally rapid scientific progress, in which many of the old methods of treatment will be superseded by new and more economical processes. The "New Metallurgy" demands a current literature of its own. Newspapers cannot give space to the calm discussion of matters of purely scientific interest; books can, at most, follow progress at a distance. The *Metallurgical Review* is intended to be a record of current progress, which shall combine the enterprise of a newspaper with the convenience and permanent value of a book. Its interest is both scientific and practical, and its contents will spare no pains to secure valuable original contributions from writers of known ability and recognized scientific standing, American and foreign.

The field of the *Metallurgical Review* includes whatever is new and important, or which possesses historical or practical interest, relating to the metallurgy of the useful metals, from the mining of the ores to the final processes which make the metals available as materials in the arts. Matters of scientific interest indirectly connected with these subjects will also be considered, when of importance to the student or the original investigator. The index of the volumes will be very complete. Each volume contains a full index of titles and a full topical index to aid the student in searching for facts and references. It is intended that a set of volumes shall be a valuable library of metallurgical literature, and nothing will be omitted which can in any way contribute to the convenience of the reader.

FOR SALE.—1400 doz. Stanley's Wrought Back Flaps, 1 1/2 and 1 3/4, at 50 cent. dis., 970¢ cash.  
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Hardware, House Furnishing Goods, Stoves, Ranges, Furnaces, Tin Work and Plumbing Business for sale. Clean stock of goods, doing principal business in a large place, within 30 miles of New York. Stock about \$15,000. Terms reasonable. Good reasons for selling. Address  
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WANTED.—By a young man who has had six years' experience in the general Hardware business, any position where he can make himself useful. Willing to work hard for small pay. City references given. No objection to leave the city. Address  
Office of The Iron Age, 83 Reade St., N. Y.

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The old Stand, Stock and Good Will of the late E. H. Fogg, this store commands the largest wholesale and retail trade east of Portland. The best of help, and doing a prosperous business. Address  
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Bangor, Me.

#### AUCTION NOTICE.

BISSELL, WELLES & MILLET,  
Wholesale Auctioneers,  
Will make a large and attractive trade sale of Hardware, Cutlery, House Furnishing Goods and Guns, WITHOUT RESERVE,

at their Salesroom, No. 15 Murray Street, on Tuesday and Wednesday, Aug. 28th and 29th. This sale will be worthy the attention of the trade, as it will consist of good lines of goods, suitable for the Southern and Western markets, and will comprise in part about 6000 doz. American Screws, 300 doz. S. S. Hinges, raw and Broad Hatches, Boys' Axes, Ship Broad Axes, Adzes, Handled and not Handled Axes, 150 doz. all Bristle Leather Back Horse Brushes, Bench Planes, Files, Plumbs and Levels, Jacks, Bronzed Latches and Brackets, Chisels, Hammers, Shovels and Spades, Coal Rods, &c., &c., together with a full line of French, Tinned, Enamelled and Galvanized Ware, Spoons, House Furnishing Goods, &c., &c.

WEDNESDAY, AUGUST 29th.  
Large Special Sale of American Tables and Pocket Cutlery, comprising about 20,000 doz. American Table Cutlery, 1st quality, and 5000 doz. 2d quality, well assorted; 3000 pair Carvers, 1st quality; a large and desirable line of Butcher Knives, Pocket Knives, Razors, S. P. Forks and Spoons, S. P. Table Knives, made by the Rogers Cutlery Co., of Hartford; 800 doz. straight and bent Trimmers, Shears and Scissors, &c., &c.  
This sale will be made in lots to suit small and large buyers. The variety of patterns and the well known character of the manufacturers (which is a sufficient guarantee of the quality of the goods) should warrant the attendance of the trade.

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In a good town in Western Ohio. An old stand; splendid location; doing a good business; good reasons for selling. Address  
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#### FOR SALE,

THE FOLLOWING

### New and Second-Hand Boilers, Engines, &c.

#### New Engines and Boilers.

15 horse Horizontal Engine, 8x12 cylinder, double crank, \$230. 15 horse Horizontal Engine, 8x12 cylinder, single crank, \$230. 20 horse Horizontal Engine, 9x13 cylinder, single crank, \$275. 10 horse Vertical Engine, 6x8 cylinder, \$250. 4 horse Vertical Engine, 4x6 cylinder, \$110. 4 horse Engine and Boiler, complete, ready to run, \$240; boiler vertical tubular; tested to 150 lbs. 3 horse Engine and Boiler, complete, ready to run, \$285; boiler vertical tubular, tested to 150 lbs. 3 horse Vertical Engine and Boiler, complete, ready to run, \$175. 8 horse Bacon Hoisting Engine and Boiler, complete, ready to run, \$575. 4 horse Vertical Tubular Boiler, \$125. 6 horse Vertical Tubular Boiler, \$145. 8 horse Vertical Tubular Boiler, \$160. 11 horse Vertical Tubular Boiler, \$200. 16 horse Vertical Tubular Boiler, \$250. 40 horse Horizontal Tubular Boiler, \$380. One Upright Drill, swing 24 in., \$125.

#### Second-Hand Engines, Boilers, &c.

60 horse Horizontal Engine, 16x20 cylinder, \$800, good order. 60 horse Locomotive Style Boiler, \$500, good order. 6 horse Locomotive Style Boiler, \$125, good order. 4 horse Vertical Tubular Boiler, good as new, \$100. 12 horse Horizontal Engine, 7x10 cylinder, pump, heater and governor, \$225, good as new. 11 horse Vertical Engine, 7x10 cylinder, \$200. 8 horse Horizontal Engine, 6x12 cylinder, \$125, good order.

We also have two new power or hand Pipe Cutting and Threading Machines, cut from 1/2 to 2 in. pipe, with full sets of dies, 1/2 to 2 nipple sockets, price \$60 each; several bench and foot lathes from \$30 to \$50. Also Steam Pumps, Pipe, Belting, Valves, Fittings, &c., &c.

Write us, stating what you want, new or second-hand, and we will answer cheerfully.

#### Lovegrove & Co.,

125 N. Fourth St., Philadelphia.

### Ramsey's Car Truck Shifting Apparatus.

The advantages gained by using Ramsey's Car Truck Shifting Apparatus, are as follows:

1st.—The power required to run a car on the level track is sufficient to separate the trucks from a car body.  
2d.—It avoids twisting or straining the car frames.  
3d.—The manufacturing cost of this Shifting Apparatus will not exceed one hundred dollars. And each one is capable of doing more work with less strain to the car, and without the assistance of an extra Steam Engine, than a Steam Hoist, costing twelve thousand dollars.  
At each one of the principal stations where car wheels are regularly tested to see how they stand the journey, a switch is placed, having a depression or pit about eighteen inches deep, with gentle incline at each end, and on each side a narrow track, remaining on the level, upon which is small but strong trucks, designed to carry supporting beams or cross-bars extending from one to the other across the pit, for the purpose of bearing the car body while the trucks run down the incline rails to the pit.  
A Working Model of this Apparatus is on exhibition at

220 S. Fourth Street, Philadelphia, Pa.

Communications may be addressed to

RAMSEY & SCARLETT, as above, or to

Box 162, Cobourg, Ontario, Canada.

See The Iron Age of Sept. 7, 1876.

A GENTLEMAN HAVING A FOUR YEARS' experience in the agricultural implement trade on the continent, desires to make an engagement in a similar line, or in machinery or manufactures.

Has a first-class acquaintance in Germany, Austria, Belgium, Holland, Sweden, France and Russia. Best of references given. Address  
P. O. Box 972, Auburn, N. Y.

#### SPECIAL NOTICE.

I have three patents for Dies, Machinery and Tools for making Augers and Bits, each running seventeen years; dated as follows: Dec. 19, 1863; January 31, 1866, and July 3, 1866. There is a special claim on each of the dies. All persons infringing on said patents will be held responsible to the extent of the law. Russell Jennings.  
DEAR RIVER, CONN., Sept. 7, 1874.

#### For Sale.

A lot of Baeder, Adamson & Co.'s best No. 1 1/2 Emery Paper in uniform pieces, 4x2 inches, at less than half price of full sheets.

J. H. COLT & CO.,

297 Broadway, N. Y.

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BREMEN, GERMANY.

Dealers Exclusively in American

Hardware.

Manufacturers who wish to have their goods introduced in Germany, please correspond.

#### FOR SALE OR EXCHANGE

For Hardware or other Merchandise.

The Stock, Models, Machinery and Patent for Wood Carving by Machinery, now in successful operation, and has been for ten years, and is offered only on account of declining health of the manager and owner, and is free of all debts and encumbrances. Address  
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#### Wanted—A Partner,

In a foundry and machine business, already well established. Locality splendid and healthy.

A practical man with means is wanted to join a practical man who is already well established.

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#### Wanted,

A General Agent in every State in the Union, for the sale of Wrought Iron Highway Bridges, new in design, combining maximum in strength and minimum in cost. For particulars address

W. H. O. DOUGLAS,

Binghamton, N. Y.

#### Special Notices.

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(ESTABLISHED 1854.)

Importer & Dealer in HARDWARE, Manufacturers' Agent, etc.

12 & 14 Front and 250 & 252 Market St., San Francisco.

I am prepared to make arrangements with Eastern manufacturers to act as their agent for the sale of Hardware, etc., on the Pacific Coast.

#### REFERENCES:

Sargent & Co., 37 Chambers Street, New York.  
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The Pennsylvania Tack Works, Norristown, Pa.  
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PARIS,

American Commission Merchants,

Agents for Exhibitors at the French Exhibition of 1875. Sales of American Goods effected in Europe. For a circular or Special Information address their representative,  
A. W. MORTON,  
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#### Export to Germany

And Surrounding Countries.

Agency for Soliciting Patents  
In the German Empire.

See the new Patent Law published in full in The Iron Age of June 21, 1877.

Hammacher & Delius,  
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Dealers in exclusively

American Hardware, Agricultural Implements, House-Furnishing Goods, &c.

HOUSE IN NEW YORK.

A. HAMMACHER & CO.

WANTED.—A first-class business man familiar with machinery and manufacturing, capable of handling large bodies of men, desires a responsible position. References satisfactory. Address,  
IRON AND STEEL,  
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To Ironmasters, Metallurgical Engineers, Steel Makers, Colliery Owners and all interested in Pig Iron, Iron Mines, Steel, Coal, Fire Bricks, &c.

#### IRON SMELTERS'

### POCKET ANALYSIS BOOK.

BY THOMAS WHITWELL,

Member Institution Mechanical Engineers, Member North of England Mining and Mechanical Engineers, Hon. Member American Institution Mining Engineers, President Cleveland Institution Engineers.

Blank analyses prepared for Ores, Coke, Coal, Limestone, Pig Iron, Steel, Fire Clay and Bricks, Slags, Furnace Charges, &c., Tables of Areas and Circumferences, Tables of Specific Gravities, French and English Measures, &c., and Pages for No. 6.

Oblong fcp., pp. 152, Roan. Price, \$2.00.

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### DROP FORGINGS.

The TRENTON VISE & TOOL WORKS, Trenton, N. J., having increased their facilities, are now able to do all kinds of

Iron and Steel Drop Forgings

in quantities to order at reasonable rates.

HERMANN BOKER & CO., Proprietors,

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#### A Gentleman,

who is about to locate permanently in Brazil, would like to communicate with manufacturers of Hardware, Agricultural Implements, &c., who desire to be represented or to increase their trade in that country. Address  
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#### TO LET,

A Light, Handsome Office.

Possession Immediately.

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The undersigned offer their services as agents to

American Producers of Metals.

They represent foreign brands of Zinc, Russia Iron, Hoop Iron, Window Glass, Cutlery and Guns.

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#### For Sale.

One 12x36 in. Green cut-off Engine; two 10 h. p. Baxter Engines; one 6 h. p. Haskins, without boiler; one 30 in. x 36 ft. planer; one 20 in. x 24 ft. do.; one 16 in. x 31 ft. do.; two 16 in. Pratt & Whitney Lathes; six 14 in. Lathes, cheap; four Upright Drills; one Wood, Light & Co. double head Milling Machine; two extra heavy Milling Machines; one Chucking Lathe; one 14 in. Putnam Shaper; one 8 in. New York Steam Engine Co. do.; one heavy shear; one 700 lb. Steam Hammer for 2 1/2 x 4 in. iron; one light shear and large lot of miscellaneous machinery and tools.

The Bullard Machine Co., Limited,



## INDUSTRIAL ITEMS.

## VERMONT.

The Fairbanks have executed orders from the United States government the past three years for over 7500 scales. This firm is still furnishing—under contract with the various departments—scales for all parts of the country. In a contract just secured from the Treasury Department for the fiscal year (which expires June 30, 1878) the government shows its preference for Fairbanks scales by paying the St. Johnsbury firm 33 1/4 per cent. more than the bid of competing parties.—*Springfield (Mass.) Republican.*

## CONNECTICUT.

Derby Silver Co. are running their metal department of business 14 hours per day, and are behind on orders. They are putting up an addition to their buildings 130x45 feet.

The Norwalk Lock Factory started work on the 13th with 100 hands.

The English steamer, John Bramall, sailed from New Haven some time on Saturday night, the 11th, with a valuable cargo of ammunition, consigned to the Turkish War Department. The Union Metallic Cartridge Company shipped 32 car loads of cartridges, and the Whitney Arms Company, of New Haven, supplied the balance of the cargo. No report of her sailing was made, for the obvious reason of keeping the Russian authorities in ignorance as to her movements.

## NEW YORK.

The Ten Eyck Ax Manufacturing Company has been dissolved, and Jonas S. Ten Eyck is now the sole owner of the concern, and will carry on the business.

Work was resumed at Corning & Co.'s steam mill at the iron works recently. The star forge and the Bessemer steel works are idle. Nearly all the departments of Burdett's mills are running.

Work has been resumed at the steel works, Troy.

The Cedar Point blast furnace, at Port Henry, will go out of blast on September 1st for relining and other repairs.

## PENNSYLVANIA.

From the Newcastle Guardian we get the following concerning the iron works of that city: "The new pipe works are now running. The Aetna Furnace is being repaired, and will probably blow in next week. Workmen are engaged in making repairs on the Red Jacket Furnace night and day, and it will probably soon blow in. The Crowther Furnace and the Aetna No. 2 are in blast. The Red Jacket, Aetna No. 1, Rosena, Sophia and Little Pet are shut down."

The Whitwell hot blast stoves, being erected by the Crane Iron Co., are rapidly going ahead, but several months must elapse before they will be ready for use. One stove is already being lined with firebrick, and the ironwork of another almost completed. The ironwork is under the management of Mr. Daniel Milson and his force of boiler makers. The stoves are airtight, and the work of the most substantial kind. Upon their completion, the stack will be commenced and extended about 150 feet. The correctness of this work can only be determined when it is known that the stack will stand unsupported by stays or braces.

A temporary suspension of work at the Pottstown Iron Company's nail factory was caused by the cylinder head of the engine blowing out.

The Pennsylvania Railroad Company has just finished at the Altoona shops a handsome observation car. It is intended to give travelers a better view of the Horseshoe curve and its grand scenery. It is built like other cars, only that the side is open and has comfortable arm chairs.

The Susquehanna Iron Company at Columbia has reduced the wages of its heaters and rollers 20 per cent. and puddlers 12 1/2 per cent. Employees getting \$1 or less have not had their wages reduced. The men have agreed to submit to the reduction and keep the mill running.

The Bridge Works of Messrs. Cofrade & Saylor, at Pottstown, are engaged in finishing up the Baltimore-Central Railroad bridge, to be erected at Chadd's Ford, Delaware county, the total length of which is 90 feet. They are also constructing a highway bridge to be erected near Weaver's Mills, Lancaster county. The firm will soon have the work under way for a drawbridge, 411 feet in length, to replace the old wooden bridge at Penrose Ferry, Philadelphia.

Work at the Windsor Furnace is progressing rapidly. Carpenters, masons and blacksmiths are busily engaged on repairs. Charcoal is being made on the mountains, and teams are hauling it in and stocking it.

The Indiana Messenger says: "The citizens of Blairsville have offered the Pennsylvania Railroad Company 14 acres of land adjoining the town if the company will agree to erect their machine shops there."

The Co-operative Iron Works, Danville, are briskly at work making rails. The Pennsylvania Iron Works, at same place, are also in operation. The break at the Danville Iron Works has been repaired and work commenced. The National Works are idle.

## PITTSBURGH AND VICINITY.

The troubles between Lewis, Oliver & Phillips and the puddlers at their mill in Allegheny have been settled, and work resumed.

The losses by the late riots to the railroad companies, including freights destroyed, have been figured down, by railway officials in Philadelphia, to \$2,500,000—one-half less than the lowest estimates made here after the fire.

There have been five deaths from the accident at Totten's foundry.

Thirty-one locomotives have been transferred from the Eastern to the Western division of the Pennsylvania Railroad, to supply the places of those destroyed by fire.

The following coal operators have agreed to the basis adopted by the recent convention of miners: Henry B. Hays & Co., Sandy Creek mines, No. 1; Turtle Creek mines, Sandy Creek, No. 3; Armstrong's, Whiteash; Coal Bluff mines; Cliff mines

## AMERICAN SCREW CO.,

Providence, R. I.

Manufacturers of

# IMPROVED

## Gimlet Pointed Wood Screws,

# Patented

May 30,  
1876.

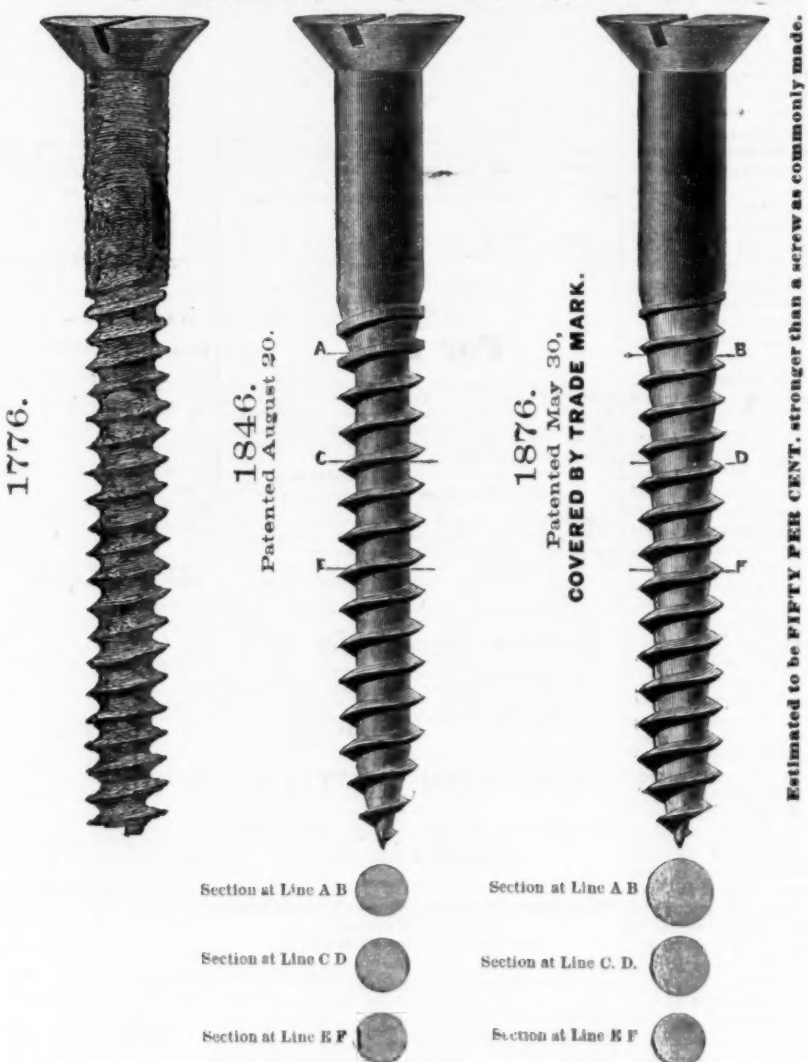


After forty years' experience we offer to the trade our Centennial Screw, patented May 30, 1876, as the best we have ever known.

The method of manufacturing is also patented, and we are changing our machinery as fast as possible, to manufacture the improved article only. To introduce them, they will be sold at same price as the old style screw.

The new screws will be packed in manila colored boxes with new label covering end of box, and enlarged figures showing plainly contents.

To distinguish this screw we have adopted a trade mark, which is also secured to us.



The above drawings show the progress of screw making from the old blunt point to style now adopted.

Experience has shown that the weak point of screws, as formerly made, is at the heel of the thread, where all the strains of forcing the screw into the wood naturally concentrate.

To avoid the sharp angle existing in the old style of screws has been the aim of all manufacturers, but every expedient hitherto adopted has proved as objectionable as the evil complained of.

It will be seen in our new screw that not only is the sharp angle avoided, but the strength very much increased, as illustrated above. See sections at lines.

## CLAIM.

"A Pointed Wood Screw having the outer periphery of the thread upon its body cylindrical, while a portion of the body below the thread and near the neck is conical, the remainder of the body to the point being cylindrical, and yet having all the thread brought to an edge of a constant angle, without jogs in the paths between the threads, substantially as described."

Estimated to be FIFTY PER CENT. stronger than a screw as commonly made.

(Coal Bluff); Turnbull & Hall, Oakdale mines, Pan Handle.

Shoenberger & Co.'s mill will resume Wednesday. Zug's resumed Monday. The nail factory at both was in operation last week.

Hussey, Howe & Co.'s Steel Mill will resume operations Wednesday.

The new shop of the Pittsburgh Steel Casting Company, in place of the one destroyed by fire, is rapidly approaching completion. It is a brick structure, and will be very convenient. The work is at present carried on in temporary sheds.

## WEST VIRGINIA.

Messrs. Hobbs, Brockunier & Co., glass manufacturers, Wheeling, have not yet given the men any answer. They have been notified that if the demand of their lamp blowers is not acceded to the men will strike in a body. They have heretofore been receiving \$1.20 per turn, and as they generally make two turns each day, their wages amounted to \$2.40 per day. The extra 10 cents per turn demanded would increase their wages to \$2.60.

## NORTH CAROLINA.

Charlotte contains a foundry and machine shop operated by John Wilkes, son of the late Rear-Admiral Wilkes.

## DISTRICT OF COLUMBIA.

The Navy department has advertised for 112,000 pounds of boiler iron and 37,500 pounds of boiler rivets.

## MARYLAND.

The mill at Cumberland, is still closed. Last week the city authorities wrote to Vice President Keyser requesting him to use his influence with the company to start the rolling mill. He replied that he would do all he could.

## OHIO.

T. & A. Pickering, Hardware Merchants of Cincinnati, have recently removed to No. 180 Main St.

A new firm has recently been formed in Cincinnati, doing business under the name and style of H. L. Shepherd & Co. They have taken the buildings Nos. 88, 90 and 92 Elm Street, and put in some new and improved machinery. They are manufacturing Shepherd's lathe as a specialty and other tools of improved styles.

Bourne & Knowles, Cleveland, give occupation to thirty-five men in the manufacture of nuts, washers, etc. Business is moderately good and the shop is running at about three-fourths its full capacity. During the present year they have put in machines for making hot-pressed nuts, and now they send out both hot and cold-pressed.

In the Aetna Iron Works Company, Ironton, there are 107 stockholders. Of these there are only nine persons who may be regarded as capitalists. All the others are workmen or persons daily employed at some labor to earn a living.

The old rod mill, Cleveland, No. 1, on Wednesday night turned out 38,320 lbs. of common-sized rods, No. 4.

The Lawrence Mill is the only one now running in Ironton.

The Falcon Iron and Nail Mill, Niles, was to start up again Monday.

Bonnell, Bottsford & Co., Youngstown, are building a 60x23 addition to their warehouse, which is to be used for storing nails.

The number of pounds of cotton ties that were made last Wednesday night at the Youngstown rolling mill is 22,222. Ring and O'Brien, the rollers, are doing some fine work and turning out some splendid iron since the new mill was built.

Himrod Furnace No. 2, which was dampened down during the strike, resumed operations Tuesday morning, the 14th.

## KENTUCKY.

Snead & Co., Louisville, Architectural Iron Works are running full force and have their hands full.

Byrne & Mackenzie, of the Louisville Chain Works, have started up again, and are running full force. They have only been established little more than a month.

Jno. Stanger & Co., is the firm style of the new Louisville co-operative glass works. In ten days they will commence blowing, which will be just five weeks from the time ground for their factory was first broken.

Dennis Long & Co., of the Louisville cast pipe works, report large orders from all over the South and West.

Hunnell Furnace blew out Saturday, to put in a new inwall and new foundation timbers under her blowing cylinders. She will resume blowing in a month.

Mt. Savage Furnace, claims fourteen tons per day.

At Star Furnace the ore diggers only are at work.

The repairs at Swift's Iron and Steel Works, Newport, are completed, and the mill is now in full blast from end to end.

## MICHIGAN.

The following shows the total shipments of iron ore from the Lake Superior district for the season, together with those of a corresponding period last year:

	1876.	1877.
From Marquette.....	248,703	305,326
From Escanaba.....	188,620	228,487
From L'Anse.....	44,319	44,273

Total..... 481,642 578,086

Showing an increase of 99,420 gross tons.

—*Marquette Mining Journal.*

The Munising Furnace is doing good work and will continue in blast until the stock of wood and charcoal remaining on hand at the Bay Furnace is exhausted.

The Marquette and Pacific Furnace, which has been banked up the past fortnight, owing to an interruption in the supply of coal and coke, will commence blowing again this week. A fresh supply of fuel is on the way.

The firm of Stinefeld, Frank & Blitz, Detroit, glass manufacturers, decided to set pots last Wednesday. They will commence to blow on the Monday following. They have a new manager here, just over from Germany, who comes determined to make pure white crystal glass.

## MISSISSIPPI.

Meriden has an iron foundry, which is turning out iron sash frames of a very superior quality. Four hundred of these sash frames were recently shipped to one point.



# N. & G. TAYLOR CO., IMPORTERS OF TIN PLATE, PHILADELPHIA. SHEET IRON.

We ask the attention of the trade to our own special brands of Sheet Iron, which we keep constantly in stock and are prepared to deliver in large or small quantities. We enjoy unexceptional facilities for the manufacture of all kinds of Sheet Iron, and flatter ourselves that we keep a larger assortment of sizes and qualities than any other house. Please write us when desiring any information whatever on Sheet Iron.

We can quote, when desired, on the following **BLACK SHEET IRON**, and when ordering it is best to state the kind wanted:

Roofing Sheet Iron Leaded Iron,	Philadelphia Russia Iron, Imitation	Polished Iron, Patent Planished Iron,	Russia Sheet Iron, Perfect, " " Stained.
Common Stove Pipe Iron, Puddled Iron, Boiled, Cold Rolled,	Charcoal Rough, " Smooth Finish, " Polished, Annealed Iron,	Blue Annealed, Best Bloom, Cleaned or Scaled Iron,	Flue and Shovel Iron, Bake-Pan Iron, Iron for Elevator Buckets.

Bread Pan Iron,  
Dripping Pan Iron,

Corrugated and Crimped Iron,  
Bridge Iron,

Boiled Iron,  
Japan Iron,  
Special or Pattern Sizes.

Wagon Box Iron,  
Pipe Iron.

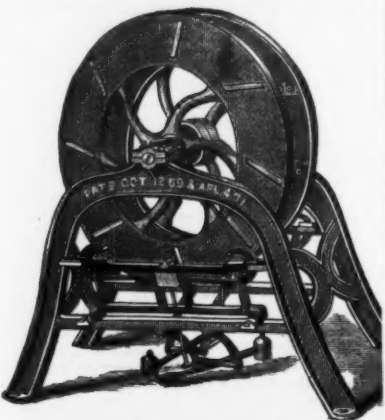
**"HENDY," Extra Fine Quality.**

## GALVANIZED SHEET IRON.

This can be had of us in any quantity, size and kind. We carry constantly in stock the same grades as in Black Sheet Iron, and when ordering please state quality desired.  
Common Galvanized, Refined Galvanized, Double Refined Galvanized, Bloom Galvanized, Extra Quality Galvanized, "Hendy" Extra Fine Quality Galvanized

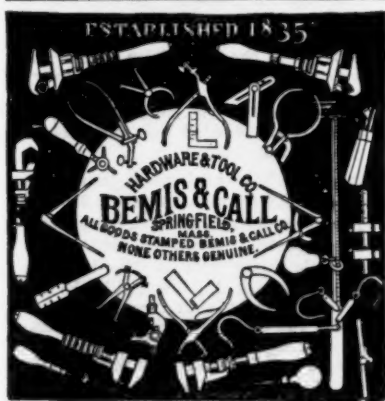
N. & G. TAYLOR CO., Importers of Tin Plate, Philadelphia.

## CROSSLEY'S Patent Stave Jointer.



The most Simple, Durable and Perfect Jointer made. In four sizes, jointing from 16 to 46 inches in length. In use from Maine to California. Is used by the largest stave and barrel manufacturers in the world. Will pay for itself in 90 days in saving of time and timber over any Saw Jointer ever used. Send for circular.

H. A. CROSSLEY,  
78 Columbus St., Cleveland O.



W. & J. TIEBOUT,

MANUFACTURERS OF

Brass, Galvanized and Ship Chandlery

## HARDWARE.

390 Pearl Street, NEW YORK.

WILSON BOHANNAN,  
Manufacturer of Patent



**BRASS  
Pad Locks,**

FOR

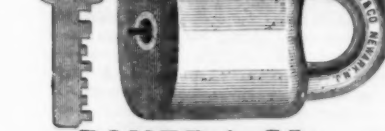
Railroad Switches,  
Freight Cars,

AND THE HARDWARE TRADE

All sizes, with Brass and Steel  
Keys, with and without chains.

**PASSENGER CAR LOCKS,**  
Bronzed, Nickel-Plated and Japanned.

**BROOKLYN, N. Y.**  
Catalogues and Samples sent upon application.



ROMER & CO.,

Established 1897. Manufacturers of Patent Scandinavian  
or Jail Locks, Brass Pad Locks for Railroads and  
Switches. Also, Patent Stationary B. R. Car Door  
Locks, Patent Piano and Sewing Machine Locks.  
141 to 143 Railroad Avenue, NEWARK, N. J.  
Illustrated Catalogue sent on application

## The Patent Automatic Stokers

which were shown by Dillwyn Smith at the Centennial Exhibition in the British section, and obtained the medal and highest award, are now offered to the users of steam in the United States, by the "United States Automatic Stoker Co." under a license from Dillwyn Smith, for use on land boilers, with full confidence that the satisfactory results obtained in Great Britain and on the Continent of Europe (where over 1200 of them are in use), will be fully realized here. Some of these results are: The generation of from 25 per cent. and upward of steam from a given grate surface above what is obtained from the same quality of fuel fed by hand. The lessening of the cost of steam from 10 to 30 per cent. from being able with the Stokers to properly burn a lower priced fuel. The entire removal of the smoke nuisance. The lessening of the labor of the fireman. Their use also materially reduces the temperature of the fire room and also prevents the injury to the boiler caused by the contraction and expansion of the plates resulting from the frequent opening of the fire doors in hand firing. These and other advantages have secured their introduction into the boilers of many of the largest Mills and Iron Works in England and other countries, and we are now turning out an average of 10 machines per week. A few letters are given from some of those having them in use, the statements in which can be implicitly relied upon. For information respecting price, &c., apply to

### THE UNITED STATES AUTOMATIC STOKER CO.,

DILLWYN SMITH, President, 2 Chestnut St., Philadelphia.

LAND MACHINES.

From A. M. Collins, Son & Co.'s Factory, Third and  
Canal Streets, Philadelphia.

DILLWYN SMITH, Esq.—Dear Sir: After several  
months' experience with your Automatic Stokers, we  
take pleasure in stating that they have proved entirely  
satisfactory to us. The saving in cost of fuel we estimate  
at 20 per cent., increased amount of steam fully 50  
per cent., beside giving us a very regular supply, the  
variation not being appreciable on steam gauge. Hoping  
you may be successful in introducing them into  
general use in this country, we remain,  
Yours, truly,  
A. M. COLLINS, SON & CO.  
Wigan Coal and Iron Company.

Wigan, September 26, 1875.

Dear Sir: I have pleasure in certifying that the

Stokers applied to our boilers at Kirkless have worked  
to our satisfaction, and have effected a saving in fuel.  
Be good enough to put in hand a more for the range  
of boilers at our Alexandria Pit.  
I remain, yours, truly,  
W. H. HEWLETT.

From J. B. Jones, Esq., Afonwen Paper Mills, Holywell.  
Your Stokers answer my purpose; without them I  
could not have obtained that regular supply of steam  
throughout the day. I formerly used coals; with the  
Stoker I use slack, and save fully 25 per cent. in cost of  
fuel. They are suitable for all boilers.

The Earl of Dudley's Round Oak Works,  
Birmingham, 4th March, 1875.  
I have much pleasure in stating that the Stokers you  
have fixed at these Works are giving most satisfactory  
results. The first you put down convinced me that we

could use it for burning the fine siftings or dust from  
the slack; and those you have since erected have fully  
confirmed me in that opinion, for not only do we now use  
the siftings we could not previously burn at all, but the  
generation of steam is so rapid that we have discon-  
tinued using one of the boilers, finding we can obtain  
by the aid of your Machine, quite as much steam from  
three boilers as we previously could from the four.  
Yours, truly,  
R. SMITH GIBSON.

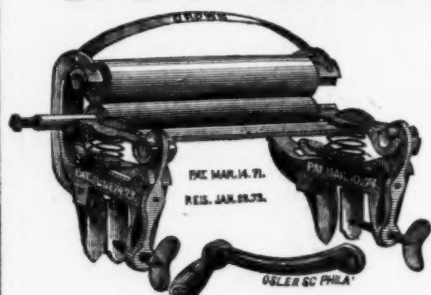
Hurst Mills, Ashton-under-Lyne,  
20th September, 1875.  
Dear Sir: We have had your Patent Mechanical  
Stokers in our use for some time, and find they work to  
our entire satisfaction, and effect a considerable saving  
in coal.  
Yours, respectfully,  
OLDHAM WHITTAKER & SONS,  
Per W. THORP.

Note.—They have ten double Machines at Work.

## THE AMERICAN MACHINE COMPANY, Philadelphia, Pa.,

MANUFACTURERS OF

### SPECIALTIES OF LIGHT IRON WORK.



CROWN WRINGERS,

with Patent White Rubber Rolls, Galvanized Malleable Iron Frame Work,  
Bessemer Steel Springs, &c. Noted for Strength, Durability, Efficiency and  
Simplicity.

No. 2, Rolls 1 1/2 in. diam., 10 in. long. No. 2 1/2, Rolls 1 1/2 in. diam., 12 in. long.  
No. 3, Rolls 1 1/2 in. diam., 12 in. long. No. 4, Rolls 2 in. diam., 12 in. long.



CROWN FLUTING MACHINES,

with valuable improvements over other style Machines. Patent Spring Arrange-  
ment and Clamping Device. Noted for Superiority of Finish and Practical Ad-  
vantages. The leading Machine in the market.

Sizes (length of Rolls), 4 1/2 inch, 6 inch and 8 inch.  
Rolls with 10, 12, 15, 18, 24, 36 and 30 flutes.

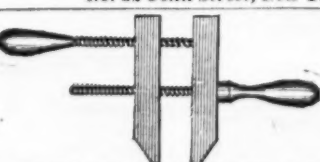


## PATENT CONVEX Fluting & Smoothing Iron.



1st. It can be used as an ordinary Smoothing Iron.  
2d. It is a fluting Machine as well as a Smoothing  
Iron. 3d. The Fluting Attachment being made of  
brass and convex in form, it has all the advantages  
of the crank machine. 4th. It combines the two  
articles in one, taking up the room of but one ma-  
chine, and is always ready for use.

A. A. WEEKS, Manufacturer,  
No. 82 John Street, New York.



R. BLISS MANUFACTURING CO.,  
Manufacturers of Hand and Bench Screws,  
Clamps, Chisels, Auger and Brad Aul Handles,  
Book Binders' Presses, Plows, Sewing Benches and  
Finishing Tool Handles, Croquet Games, Tool  
Chests, Toys and Novelties.  
Illustrated Catalogue and prices furnished on ap-  
plication.  
Pawtucket, R. I.

## The British Engineering and Ship- building Trades.

The Iron and Coal Trades Review says:  
"Recent investigations as to the present con-  
dition of the labor market in the engineer-  
ing and iron founding trades of the country  
have not brought to light any gratifying fea-  
tures, or given any hope as to an early  
improvement in the demand for skilled labor.  
With regard to iron founders, only in two  
unimportant districts is trade declared  
'good,' while in the remaining 108 districts  
the story of 'bad,' 'very bad,' etc., makes  
up the sum total of the return issued offi-  
cially by the men themselves in their monthly  
circular to their unionist members. Other  
trades, such as engineering, boiler mak-  
ing, millwrighting, machine making, iron  
shipbuilding, tool making, &c., are in even a  
worse condition. Iron founders, as we  
know, are many of them engaged at this  
season of the year with work of construc-  
tive purposes in the building trades, but in the  
several departments named above there is  
no such outside field, so to speak, to absorb  
their industrial activity. The iron ship-  
building trade has not been caught up by  
the 'spring tide,' which was vainly looked  
for some months since, when the prospect of  
war first disturbed Europe. War gives no  
confidence to industry or commerce, except  
for such operations as are full of speculative  
risk, and hence the shipbuilding yards are  
not flourishing, for even where there is some  
activity it is confessedly employed upon  
work which is not remunerative to the capi-  
talist. The millwrighting and machine mak-  
ing establishments are in a generally de-  
pressed condition, and in only a few rare  
exceptions is there any report of much work  
doing; orders are being completed, but  
inquiries which lead to orders are scarce and  
seem to be diminishing in number. The  
same may be said of the tool making trade,  
which is always a safe test as to the condi-  
tion of our industrial life generally. Sta-  
tionary, marine and locomotive engine work  
is being finished, but the immediate future is  
not promising, and the outlook for the  
approaching winter is a matter of anxiety  
for both employers and workmen in the  
above trades. Reports from correspondents  
in all the chief centers of the engineering  
trades more than confirm what has been said  
above. For every vacant place in the sev-  
eral departments of the engineer's or an  
iron founder's business there are twenty  
eager applicants. No doubt the best men  
are still in work, as the least able and least  
reliable men are the first to be discharged,  
but the discharging process has long since  
reached able men, and if nothing new turns  
up at an early date, the winter of 1877-8  
will be a trying one to the English workmen  
in the iron and engineering trades."

A contract has just been let at Amster-  
dam for the delivery of 20,000 iron sleepers  
to the Netherlands State railways. Three  
Belgian firms—the Marcinelle and Couillet,  
the Sclésin and the Monceau-sur-Sambre—  
took part in the competition; but some Ger-  
man works—the Phoenix at Laar, near Ruh-  
rort—carried off the contract. The price  
named in the accepted tender was \$6,499, the  
20,000 sleepers weighing about 800 tons. It  
should be observed, however, that the sum  
named in the contract comprises the delivery  
and laying of the sleepers, so that the price of  
the sleepers at the German works may be  
estimated at about \$5 per ton. The Mon-  
ceau-sur-Sambre Company came very near  
the accepted tender, the difference having  
been only \$32. The sleepers to be laid on  
the Netherlands State line are on the Vauth-  
erin system, 10,000 of which were recently  
tried on the Belgian State system, and re-  
jected after a careful trial. It is, perhaps,  
a little strange that the Dutch authorities  
did not take account of this circumstance.  
It is stated that the Great Central Belgian  
Railway Company contemplate a total dis-  
continuance of wooden sleepers upon its sys-  
tem.

## THE WORLD'S STANDARD



**FAIRBANKS**

## SCALES

RECEIVED HIGHEST MEDALS AT

World's Fair, London.....1851  
World's Fair, New York.....1853  
World's Fair, Paris.....1867  
World's Fair, Vienna.....1873  
World's Fair, Santiago (Chile).....1875  
World's Fair, Philadelphia.....1876  
World's Fair, Sydney, Australia.....1877

Also Sole Agents for

MILES' ALARM MONEY DRAWERS,  
HAWKINS' INSPIRATORS,  
(The Best Feeder known for Stationary, Marine and  
Locomotive Boilers.)

Also,  
OSCILLATING PUMP CO.'S PUMPS.

**Fairbanks & Co.,**  
311 Broadway, New York.

S. B. LOWE,

**Pig Iron, Storage and  
Commission.**

Chattanooga, Tenn.





## Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

SHEFFIELD, Eng., Aug. 6, 1877.

### THE STARTLING NEWS

of the past few days, conveying intelligence of the totally unexpected Turkish successes over the Russians at Plevna and other places north and south of the Balkans, has somewhat confounded the partisans of Russia in this country, and has, apparently, relieved the British government from the awkward necessity of immediately making known their intentions. At the same time there is no virtue in disguising the fact that the Czar's armies are so bulky and now so thoroughly animated with the desire to wipe out their recent defeats that we may at any moment expect to hear of the Russians proving successful in a pitched battle, especially if fought in the open. Some of our British commercial men view these Turkish successes with something approaching disgust. They say that if Russia meant to finish the war this year she ought to have gone about the thing properly, and not have allowed her armies to straggle about any how until they literally entrap themselves and cut their own communications. In any case a prolongation of the conflict, apart from the horrors entailed upon the non-combatant population, will be very bad for trade, which cannot possibly revive until this struggle is seen to be definitely decided in one way or another.

### "WORK AND WAGES"

are every now and then subjects of newspaper paragraphs in this country, and although we have hitherto been fortunate enough to escape any serious conflict between masters and men, still it cannot be said that the relations between capital and labor are on a sound and satisfactory basis. In saying this I am not to be understood to be throwing all the blame upon either side or the other. I think labor is badly distributed and often heedlessly and wickedly advised, but on the other hand, I know that capital is often far too grasping, or loses much by reason of that miserable jealousy which prevents combinations of employers from being as effective as those of the men. In the North of England the employers have just experienced a great disappointment. They had claimed a general reduction of 10 per cent. in the wages of all ironworkers, and had consented to refer the matter to arbitration with the utmost confidence that the result would be in their favor, when, to their great surprise, the arbitrator, Mr. Dale, declares that it is inexpedient to make any change in the present rate of wages. He says, however: "I think that the ultimate interests of both parties may be best consulted by leaving the wages unaltered till more time has been allowed for seeing in what direction prices tend. Should it be decidedly downward, I must not be understood to indicate any opinion that the present is to be regarded as a minimum rate of wage. Should the tendency be upward, I think that a higher range of selling prices should not be expected to carry with it an immediate corresponding advance in wages, but that the employers must be regarded as having paid through a period of great depression a rate of wages measured rather by the expectations of the future than by the capabilities of the present." The effect of this decision is that, under the rules of the Board of Arbitration, the employers cannot now get any alteration effected before March, 1878. At the Dowlais Works, South Wales, the 7000 workmen have been kept on, but only on day to day terms, at the old rate of wages. It is expected that they will resume contracts at a reduction. In the London building trade the operative masons have struck to have their hours reduced from 52½ to 50 weekly, and to have a general rise all round from 9d. to 10d. per hour. The employers decline both these requests—hence the strike. At Dundee the leading spinners and manufacturers have agreed to reduce all wages by 5 per cent. from August 9. The Belper horse nail makers have been lowered from 4/3 to 3/9 per 1000. In Scotland the great Alexander (Macdonald) declares the limitation of the output of pig iron to be hostile to the miners! and says they should retaliate by limiting the output of coals. I suppose Alexander forgets that they would also "limit" their wages. The news that on Tuesday last

**FIFTY AMERICAN CARPENTERS** sailed from New York for Manchester on one year's terms of engagement at 6/ a day has excited a great deal of close attention here, especially in trades union circles, and I hear that attempts are to be made when the men arrive to induce them to return to the States. If it be true, as stated by the London Times, that these men are coming here to "escape the perpetual strife with employers," I am bound to say that they are to be most sincerely pitied, because a strike, sometimes three or four, in the building trade is a regularly recurring feature of the British year. One of the Sheffield papers thinks this immigration an "ominous" matter. So do I.

### THE COLORADO BEETLE

business at Hereford has turned out a mere scare, as I last week supposed would be the case. The Privy Council Inspector went down post haste and found the reported formidable invader to be no other than our old friend the spotted lady bird! It is stated, nevertheless, that many "examples" of the "real thing" are arriving by post from America. At Macduff, a remote Scotch village, the postmaster discovered a dozen living beetles in an inoffensive box which had come from Canada, and he asked for and received instructions to destroy them all. This was done by means of chloroform, after which the carcasses were cremated. It is rumored that the heroic postmaster will be similarly disposed of in order to get a monument up to his memory while this historic incident is freshly remembered.

### AMONG THE FAILURES

of the past week has been that of Mr. Arthur Hotham, wheel manufacturer of Client Grange, Stourbridge, with liabilities set down at £30,000 and assets "not ascer-

ained." I hear there are American creditors in this case. Mr. John H. Grierson, of Leatherhead, London, and of Darlington has suspended payment with considerable liabilities. He was largely interested in the coal and coke trade, both as a coal owner and merchant. At a meeting of the creditors of Arthur Wade (John Wade & Sons), stock and share broker, at Birmingham, the liabilities were set down at £14,388, and the assets £1348 only, although a debtor admitted having received £17,000 during the past five years for "promoting" various public companies. The debts of Frank Cardwell, carpet, &c., manufacturer, of Mirfield, who has suspended, are £41,000, and assets £10,000.

**"THE SCARCITY OF GOOD WORKMEN"** is the subject of a leading article in the Engineer of August 3, and that able journal thinks that good workmen are scarcer than ever—a fact which means the ruin of England. "It is," says the Engineer, "the one fatal evil which nothing can counterbalance or subvert, and which will bring the prosperity of the nation to a sure and not a slow decay." At the same time, "With all his faults, we hold that the British workman is still the best and most trustworthy mechanic to be found in the globe. But he cannot stand still. He must improve or deteriorate, and with his improvement or deterioration will follow the prosperity of the country or its decay." This is all perfectly true.

**BESSEMER STEEL PRODUCTION** is also treated of by the same journal as follows:

"Some interesting and striking facts in connection with the Bessemer steel trade have just been published by the *Moniteur des Interests Matériels* of Brussels. From the statements made by this journal it appears that in the province of Liege the production of Bessemer steel during 1875 was 47,200 tons, of the value of 14,124,000*l.*, whereas the value of the 72,500 tons produced in 1876 was only 15,570,000*l.* From these figures it is deduced that the average price at the works were 42*l.* per ton in 1874, 299*l.* in 1875, and only 215*l.* in 1876, the value having thus fallen 50 per cent. within a period of two years. The whole production of iron and steel in the entire world in 1873 was 10,450,000 tons, of which Europe was credited with 8,600,000 tons. In 1875 Europe only produced 7,900,000 tons, including 1,400,000 tons—or 17.70 per cent.—of steel. The total consumption of European iron and steel was 6,700,000 tons, so that the inference is drawn that the production exceeded the demand in 1875 by 1,200,000 tons, the cause being 'no other than the introduction of Bessemer steel.' The manufacture of this steel began to develop in 1870, and has since been so rapid that there are now no fewer than 94 Bessemer steel works, employing 317 converters, in existence. Estimating the production of each of these converters at 10,000 tons annually, which is said to be about the average of Belgium, but probably below that of the United States, the existing Bessemer steel works would be able to supply a demand for 3,170,000 tons annually, or fully 50 per cent. in excess of the demand. Thus far we have been quoting from the journal named above, but we must say that, although some of the statistics are put forward with somewhat startling clearness, we must demur to the inference that because Europe produced more than was used on that continent, the balance must necessarily be surplusage. We know very well that such is not the case, for the simple reason that the greatest iron and steel producer of the world—England—is in Europe, and she sends a very large proportion of her iron and steel manufactures to every part of the globe, which is thus probably accountable for the surplus which so greatly troubles our Belgian contemporary."

### "FLUCTUATIONS IN PRICES."

Under this head *The Ironmonger* of August 1st has a long and interesting article, affording comparisons between the prices of July, 1872, and of the same month of 1877, and also of July, 1871, as showing the rapidity with which prices shot up between July, 1871, and July, 1872. The article says that ordinary coil chain, delivered in Liverpool, which was 11/ for ¾ up to 16/ for ¼, rose to 22/ and 36/6. Wright's patent anvils rose from 26/ to 34/ and Woolridge's, 23/ to 28/6 per cwt. Fire-irons were advanced 30 per cent. on net list. Frying pans, which remained for many years at 72½ per cent., became 47½. Common gridirons, which were 82 per cent., became 65 per cent. Atwood's hand hammers rose to 32/ and sledge 31/ per cwt. Nails stood in July, 1872, at —for Cordes', 20 per cent. from 'M' and 15 per cent. from 'cut' nails; Walker's 'horse' were 15 per cent. discount; wrought rose were, for 'fine', 17½ per cent. and 'common' 12½ per cent. discount. Wrought Canada spikes, which were 10/6 per cwt. in July, 1871, rose to 20/3; those that were 12/ to 22/6, and those that were 13/3 to 23/6, with other sizes in like proportion. As to cut nails, those from 3 to 6 inches became in July, 1872, 22/ per cwt.; brads 50 and tacks 67½ per cent. discount. Respecting locks, carpenters' 'rim' advanced 25 per cent., trunk, pad, chest and cupboard locks about 30 per cent. The discount of July, 1872, upon fine plate locks was 4 per cent. and best 30. The ordinary make of common spades and shovels, upon which the dividend was formerly 60 per cent., became at the date of comparison 42½ per cent.; while the cast steel quality, which had been 40, rose to 17½ per cent. Clark's tinned hollow-ware was 37½ per cent. and 5 per cent.; enameled, 20 per cent. and 5 per cent.; and common tinned, 40 per cent. discount, against 62½ per cent. in July, 1871. Galvanized 12-inch brackets rose from 8/ to 12/ per dozen. Sad irons, which were 7/3 in Liverpool in July, 1871, became 12/6 per cwt. delivered in the same spot. Light iron washers were, in July, 1872, as high as 42½ per cent. off list; in the July before they were 80 per cent. off. Weights that at the earlier period were 11/ per cwt. rose to 26/ per cwt.; convex, formerly 20/6, advanced to 32/; and H. R. S. & Co. quality became 35/6 per cwt. Bright iron wire, from 0 to 6, rose from 6/3 to 12/; No. 8, from 6/6 to 12/3; No. 14, from 8/6 to 14/3; No. 19, from 12/ to 17/3, all per bundle of 63 lbs. Present prices are not widely different from those of 1871.

### SCOTCH PIG IRON

has become rather more steady during the week with an attendant slight rise in maker's prices, but it cannot increase in value to any appreciable extent until stocks have been largely lowered. On and after August 11th the furnaces in blast at the various principal works will be as follows: William Baird & Co., 20; Merry & Cunningham, 11; Quarter, 3; Clyde, 3; Coltness and Dalmellington, 5; William Dixon & Co., 8; Monkland Iron Company, 5; Summerlee, 4; Shotts Iron Company, 5; Langloan, 5; Kinneil, 2; and Wishaw, 2. This will reduce the production from about 21,000 to about 14,000 tons weekly—representing a money value of £16,000, besides 15,000 tons of fuel. There are now 149,990 tons of pig iron in Connal's stores, but it may now be expected that the continuous increase of stocks will be stopped. Freight rates are unchanged. In the general trade there is only moderate activity, although last week's shipments from the Clyde included £11,500 worth of machinery, £3200 worth of pipes and tubes, £3000 of castings and nearly £2000 miscellaneous. Writing from Glasgow on August 3, evening, James Watson & Co. say:

In the early part of this week the warrant market was strong, with business done from 55/ to 55½, cash; on Wednesday, however, it declined to 55/1, cash, and since then it has been steady from 55/1 to 55½, cash, closing this afternoon, buyers at 55½; sellers, 55½ per ton. Shipments last week were 8332 tons, against 8555 tons in the corresponding week of 1876. We quote:

	No. 1.	No. 3.
G. M. B., at Glasgow	56/3	53/
Gartsherrie, "	56/3	53/
Coltness, "	56/6	53/9
Summerlee, "	56/6	54/6
Langloan, "	56/6	54/6
Carnbroe, "	57/6	54/6
Calder, at Port Dundas	56/6	54/
Glenarnock, at Ardrossan	56/6	54/
Edinboro, "	56/6	53/
Dalmellington, "	56/6	54/
Shotts, at Leith	56/6	54/
Kinneil, at Bo'ness	56/6	54/

The prices current, same date, of John E. Swan & Brothers gives:

Gartsherrie, No. 1	56/3
Coltness, "	56/6
Glenarnock, "	56/6
Edinboro, "	56/6

Messrs. Wm. Colvin & Co.'s report agrees with these figures.

### NORTH OF ENGLAND TRADE

remains very quiet, especially as regards iron. This continued depression has just compelled the Liverton Ironstone Company—which holds one of the largest royalties in Cleveland, and raises 200,000 tons annually—to lay off its mines until matters improve. Other ironstone mines are going on short time. The furnaces of the Middleton Iron Company, at Fighting Cocks, will be damped down this month and all the men discharged. The furnaces of the Stockton Furnace Company, mentioned by me last week as having suspended, have also been blown out, and others in the vicinity are likely to follow suit.

### THE SOUTHERN STATES IRON AND COAL COMPANY,

an American venture, mostly worked by North of England and Sheffield capitalists, is said to be doing well with its new mineral properties "right down in Tennessee." The secretary, Mr. Bowron, of Stockton, has just returned to England from visiting the property, and he gives a hopeful report of what has been done and of the work in hand for laying a railway track, &c., &c.

### TRADES OF SHEFFIELD.

There has been no trade movement of any importance during the week, nor are there any present indications of an early change for the better in the state of the heavy and principal trades of the town and district. It is hoped, however, that by the gathering in of a good harvest and the early termination of the war, some change may be inaugurated during the autumn months. In most of the industries of this town the amount of business now in hand is anything but large, and in not a few cases the carrying on of the works is mainly dependent on the orders received from day to day through the post. There are, it is true, a few firms with fairly well filled order books, but they are isolated exceptions, and only set off the other cases the more forcibly. It is, at all events, daily becoming more certain that iron making is hardly to be conducted at a profit even under the most favorable circumstances for production. The knowledge—and the continual presentation of it—of this fact induces great care all round, and has a natural tendency to bring about a gradual restriction of production. In this district there are fewer furnaces in blast than for about six years past. The action of the Scotch makers has excited no surprise here, inasmuch as it had long before been palpable that there must be some restriction of the output in the face of the unusually heavy stocks held by Messrs. Connal and the constant importation from Cleveland.

Hereabouts, pig iron remains quiet, and there have been but few sales of any size during the week. Such transactions as have been closed have mostly been on a basis closely approximating to lately quoted prices. For good English spiegeleisen there is still a moderately well sustained demand, much of it for the Bessemer manufacturers, malleable iron workers, or cast steel producers of this locality. There is also a fair inquiry for other home centers, and also on export account, mostly for the United States market. There are at least two furnaces going in this district on the smelting of Spanish and other ores in to spiegel of a manganese strength of 15 to 25 per cent.

I notice that the French government returns show that Algiers last year produced about a quarter of a million tons of ironstone besides other minerals. Much of this ironstone came into this country and a fair share to this district, where also ores from Elba and from the Grecian Archipelago are used. In respect of merchant iron I can report nothing new of any importance, the demand being anything but large, and the competition of vendors increasingly keen and close. Common bars are being done at prices under £6, which, one would suppose, cannot possibly leave any margin of profit for the makers. There is some little inquiry for sheet, and a steady trade in hoops, in which latter articles several concerns are pushing business vigorously.

The heavier branches of business remain for the most part unchanged, and, as has long been the case, short time, fewer workmen and idle machinery are the leading characteristics. In some departments there is occasionally a little spasmodic spurt, but no permanent improvement. At the best establishments in the district these observations hold good, there being no activity in any single instance. The output of steel rails is here and there pretty good, the bulk of the output being for Russia, and for some of the home lines. Several of the latter are now in the market, and for a new line in the Isle of Man a good tonnage of steel rails of 56 lbs. to the yard will shortly be required.

The ordinary cast steel trade of the town is still stagnant in almost every branch, and not even excepting firms which for 50 years past have never known such a period of depression as the present. The continental markets are very quiet, only small orders being forthcoming from Germany, Italy, Spain and France, and the American markets yield but very small commissions. The best inquiry is on account of the local, Birmingham and other English tool makers and machinists, the pen makers and the engineering houses—most of those concerns being just now moderately well employed. It is hardly necessary to remark that best tool steels are well upheld in price, and that the commonest kinds of cast steel are to be had at almost any quotation, owing to the manner in which they are being replaced by Bessemer steel. As a strict matter of fact, much of the common cast steel is in reality Bessemer remelted, and can hardly lay claim to being pot steel of the old-fashioned sort.

The coal trade remains quiet, albeit there is an export shipment of some 22,000 tons weekly from the Humber ports, and the carriage by railway of double that quantity. The South Yorkshire Steam Coal Owners' Association met at Barnsley last week, but decided not to alter prices at present, the quotations being thus left at 9/ for that class of fuel.

In the cutlery branches there is a "dead level" of flatness and want of business.

### STAFFORDSHIRE AND BIRMINGHAM.

The finished iron trade of these localities is totally unchanged, at the prices which have been so frequently mentioned by me of late. In almost every case, however, there is an abundance of underselling. I hear, for instance, of best Staffordshire marked bars changing hands at very little over £8, although the list quotation is still left at £9. In the commoner kinds £6. 2/6 to £7 is the general rate at which common bars are changing hands. Sheets are in pretty fair request, principally for export, singles being £8 to £8. 5/, and doubles at £9. 10/. There is no doubt that Australia is now our best customer for good sheets, ordinary gauges being worth £26 to £28 by the time they get into the Melbourne market. Bars sell for £10 to £12, and hoops, £11 to £12. At the date of the last mail matters were rather quieter. In some branches of the Birmingham and district hardware trades there is a change for the better, while in other directions the depression is more severe than it has ever been before. Some of the foreign and leading colonial markets have now come to the succor and are sending in very fair orders. For railway rolling stock it is stated there are good contracts in hand for the United States, India and South America.

### SOUTH WALES AND MONMOUTHSHIRE.

At the Parkend Works, Forest of Dean, the last of the three furnaces is to be put out of blast and all the men discharged. It is reported that these works, with three furnaces and a tin plate manufactory, mines, &c., were purchased two years ago by Mr. Edwin Crawshaw for £120,000. There are 6000 tons of pig in stock there now. The Tredgar Iron Company pays a dividend of 4 per cent. for last year. At Ebbw Vale the men have been served with notices terminating contracts and placing them on the day-to-day plan, which has also been put into operation at Dowlais. The total shipments of iron last week from these ports reached 2584 tons—including cargoes of rails for Spain, and bars for Malta, Turkey, &c. The total coal shipments of the week were 98,484 tons only.

### THE METAL MARKETS

have again been very quiet, and but little business has been done anywhere.

Messrs. Von Dadelzen & North say: "Copper quiet. Chill bars, G. O. B., quoted £60. The Chill charts for first half of July have at last arrived. They amount to 2300 tons, composed of 800 tons regulus and 1400 tons bars for the United Kingdom, and 100 tons bars for the continent. Wallaroo scarce; cake quoted £79. 15/ to £80; Burra, £75 to £75. 10/; English tough, £74. 10/ to £75. 10/; select, £75 to £76; sheets, £81. Tin is again lower. The last sales of Straits have been at £66 and of Australian at £65. 10/. The Dutch Trading Company's sale of Banca went at an average of 41.05*l.*, equal to about £70 in warehouse here; Billiton obtainable at 39½*l.* English ingots, £70 to £71; bars, £71 to £72. Tin plates dull. Lead quiet; £20 to £20. 7/6 for English pig. Spelter—Nothing doing; £19. 5/ to £19. 10/ for ordinary brands. Quicksilver.—The importer of Spanish has advanced the price to £9. 10/. Small second-hand lots sold at £9 to £9. 5. Antimony, £48."

Messrs. French & Smith report: "Tin, £65. 10/ for Australian. Copper and other metals unchanged. Quicksilver, £9. 5/ to £9. 10/."

Lombard Exchange official report (closing): "Copper steady at £68. 15/ to £69 for G. O. B. Chill bars. Small sales of Wallaroo cake, on the spot, at £77. 15/ to £80; Burra quoted £75; English tough, £74. 10/ to £75. 10/; best selected, £76 to £77; strong sheets, £81. Tin quiet; £65. 15/ to £66 for Straits; and Australian, £65. 5/ to £65. 10/. English ingots, £70. to £71. Scotch Pig Iron, 55 1/2. Lead dull at £20 to £20. 7/6 for English pigs; Spanish, £20. Spelter unchanged; £19. 5/ to £19. 10/ for ordinary brands. Quicksilver, £9. 5/ to £9. 10/. Antimony, £48."

At Liverpool prices f. o. b. are nominally unchanged:

	£ s. d.	£ s. d.
Merchant bar	6 10 0	6 15 0
" in Wales	6 0 0	6 5 0
Staffordshire	7 0 0	9 15 0

Hoop	7 10	0 to 8 20	0
Sheet	8 15	0 to 9 15	0
Nail rod	7 10	0 to 7 10	0
Bar, best crown	7 0	0 to 7 0	0
Boiler plates	9 0	0 to 10 0	0
Tin Plates, f. o. b. in Liverpool, per box	£ s. d.	£ s. d.	
Charcoal, I. C.	1 10	0 to 1 40	0
Coke, I. C.	0 18	0 to 1 00	0
Copper, delivered in Liverpool, per ton	£ s. d.	£ s. d.	
Bolt and sheathing	8 0	0 to 0 00	0
Tin	75	0 to 0 00	0
Tough cake	75	0 to 0 00	0
Best selected	77	0 to 0 00	0

### Iron and Steel Products at the Centennial.

Gen. Francis A. Walker, best known as the compiler of the ninth census, in an article contributed to the *International Review* on "the late World's Fair," says of iron and steel exhibits:

"In the manufacture of iron and steel and their products, the exhibition at Philadelphia was irregular, yet, on the whole, both imposing and instructive. England, first of nations in this department, was not largely represented; but the iron industry is emphatically one to which the proverb *ex pede Herculem* applies. Steel plates, rifled cannon, railroad iron, do not come within the chapter of accidents. Drop forgings are not to be cultivated as a fancy crop. In some departments a given amount of care and labor would enable articles of the highest excellence to be brought forward from countries which have no standing in the commercial production of such articles. But no nation not long and largely versed in the manufacture could say, 'Come, let us send iron and steel to Philadelphia, and get much glory to ourselves.' The plant, enormous, expensive, must be in existence; the skill and knowledge essential to the production of a single link of such chains as were shown at Philadelphia must have been accumulated through the experience of generations. Hence we may say that, while the exhibit of England was limited, it showed almost limitless capacity in this great industry."

"From France the products of some of the first establishments were wanting—Le Creusot, with its 15,000 workmen, and others only second to it in importance. Yet the French exhibit indicated notable power of production. The Russian display showed great facilities and an unexpected progress in the manufacture. Our own country, second only to England in the commercial importance of its production of iron and steel, has not undertaken those giant tasks—24-inch plates and 81-ton gussets—which have tested the utmost capabilities of British science and skill; but while the United States are happily free from the necessity of expending their energies in the production of such masterpieces of casting and forging as appeared in some of the European sections, the economic display of iron and steel by our manufacturers was surprisingly large and good. The first space allotted by the Bureau of Installation was filled by the splendid exhibit of the Cambria Iron Works, illustrative of each successive process and product, from the ore up to the highest forms of the manufacture."

"The triumphs of this department, however, if we have reference merely to what was shown, were reserved for Germany and pre-eminently for Sweden. In the former the products, both warlike and industrial, of the Krupp Works at Essen formed one of the features of the Exhibition, while the display from the latter country was the very poetry of power. The writer confesses that he found nothing in the Main Building so fascinating as the Swedish iron and steel."

We copy the following items regarding the Shenango Valley from the *Sharon Herald*: "Iron matters during last week were better than was expected. When the strike first began people knew that if the blockade lasted another week all the works in the valley would be forced to shut down. Our furnaces could run on native coal for fuel, dispensing with coke; but the limestone was the emergency that would be an impossibility to do without. However, just in the nick of time, the strike ended in a magnificent fizzle, and manufacturers breathed easier. The scarcity of limestone and lack of coke afflicted all of the blast furnaces, and some of them seriously. The great 'bugbear' of old-time furnacemen, after a stop-up—a hard notch end casting over the dam (often damned by the keepers)—didn't occur at Westerman No. 1 the first cast after the stop was made. At the bottom of the notch the furnace didn't hang and slip, as is usual in such cases. The tuyeres working bright and getting a little hot around the bottom of the stack was all that was noticeable; and last week it averaged about 45 tons a day of good mill iron. Stack No. 2 is working average, making about 32 tons per day of No. 1 iron. This stack is now in the third year of its blast. At the 'Old Mill' the puddlers were off all week, the nail mill, bar and guide mill being on. Keel Ridge Furnace is working along smoothly, and is about over its little spell. Stewart Furnace No. 2 averaged about 40 tons per day of No. 1 Bessemer—by Saturday's work, 57 tons. They will beat that this week. They have been repairing No. 1 very slowly. One good thing we noticed: they have begun to ship iron to the Edgar Thompson Steel Works, Pittsburgh. In West Middlesex the Fanny Furnace is doing well, considering the adverse circumstances under which it was blown in. Before they had got her fully warmed up the strike cut off the supply of limestone and what is really essential to a good blow-in—coke; but, notwithstanding these drawbacks, she is averaging over 30 tons a day of good iron. The works are being improved by a new hot-blast oven. The pipes are the Homer Hamilton patent; four chambers, nine pipes in a chamber. Also, an addition to the stock-house of 40x50. This addition was found necessary to hold a supply of coke. The Shenango Furnace No. 1 is making about 25 tons per day of average iron. No sign of doing anything at No. 2. Douglas Furnace No. 2, at Sharpsville, is ready, and it is thought, will blow in soon. Spearman No. 1 is working along as usual. No. 2 is undergoing repairs. Allen's Furnace is working all right."



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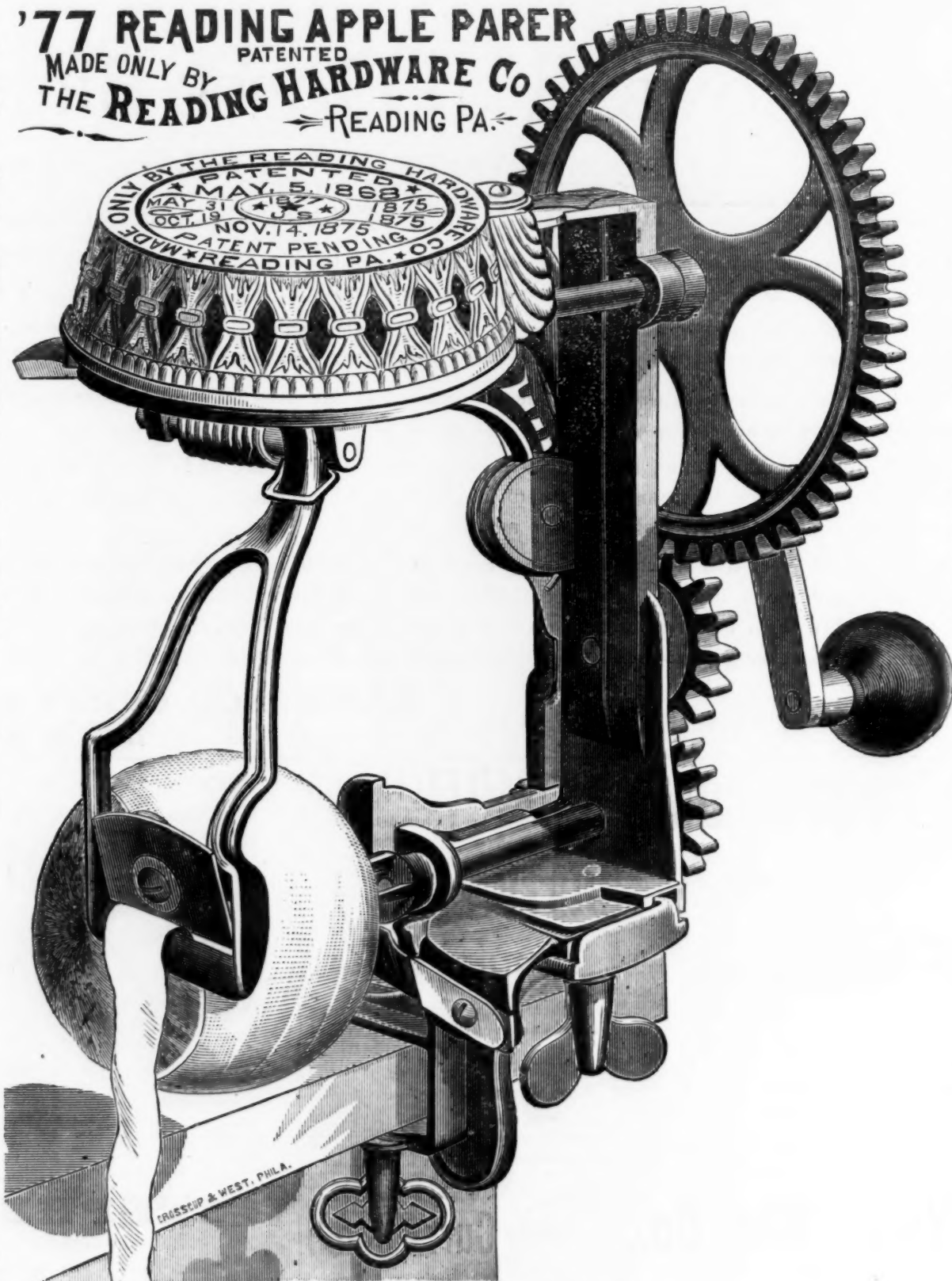
Among its advantages are the following:

1st. No parings are left on the base of the apple by this machine, the extra knife on the arm removing all remaining after the operation of the principal knife.

2d. It can be secured to any part of the table—front, side or corner—and will still throw the paring clear of the machinery.

3d. The clamps are made heavier, and by the upright position of the machine it is secured more firmly to the table and has more steadiness in operation.

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4th. The movement being uniform, it takes off a thinner paring, while the direct action of the push-off lever removes the pared fruit without handling.

5th. The shafts, being square, cannot turn in the wheels of the machine.

6th. Each machine is packed separately in a paper box, rendering it less liable to injury in transportation and better adapted to the wants of the trade.

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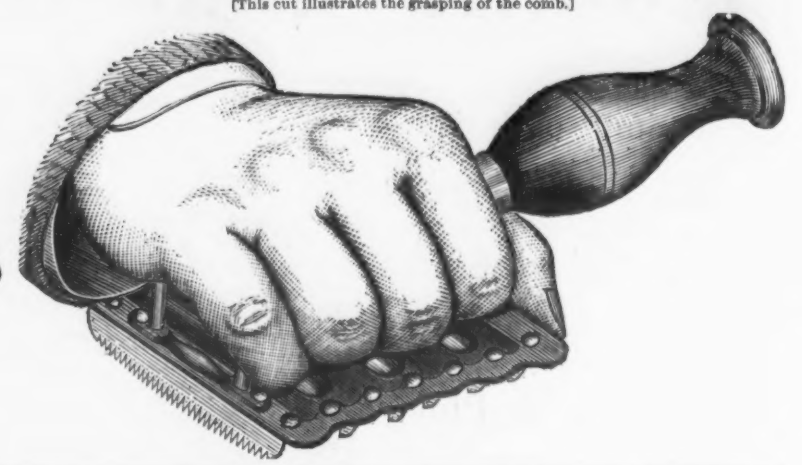
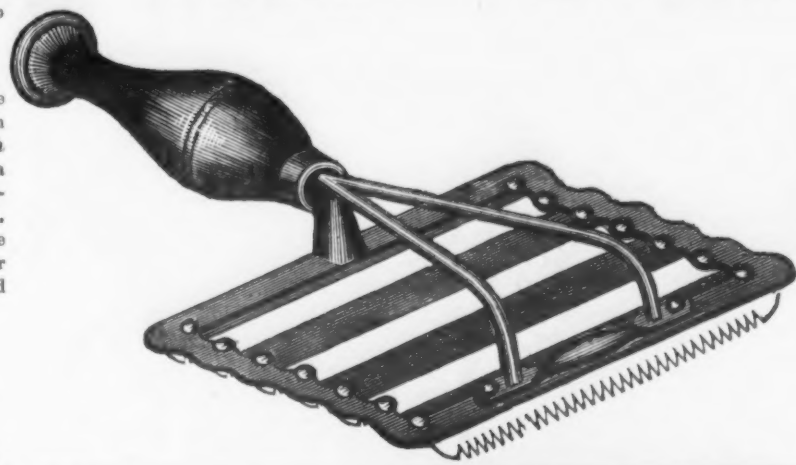


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We invite the special attention of the trade to our

Patent "Superior" Curry Combs, which are the best and most complete side handle combs having a grasp over the back now in existence, and which for neatness, strength and durability have no equal. Give them a trial, and you will be convinced they are superior to any Curry Comb in the market. They are neatly put up in paper boxes of one dozen each, and packed 15 dozen in a case. For sale by the Jobbing Hardware, Saddlery and Wooden Ware trade.

**HOTCHKISS' SONS,**  
Bridgeport, Conn.  
SAMPLE AND WAREHOUSES,  
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[This cut illustrates the grasping of the comb.]






## Lawrence Curry Comb Co.

MANUFACTURERS OF

## CURRY COMBS AND HORSE BRUSHES,

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THE attention of the trade is hereby called to the re-introduction, by Hotchkiss & Sons, of an old infringement of our Patents.

The so called "Superior," is not in any respect new, all that is claimed for it is that the grasping device is made from one piece of brittle cast metal, instead of tough flexible wire, as in the "Perfect." We need not discuss the absurdity of calling such a change an improvement.

We promptly suppressed the manufacture and sale of these Combs when more enterprising infringers of our rights originated and placed them on the market, and *we shall certainly not submit to their re-introduction, by a man who never originated anything.*

In the course of a quarter of a Century's experience, it never occurred to Mr. Hotchkiss, that there could be an improvement made on the unwieldy and awkward articles made by his ancestors.

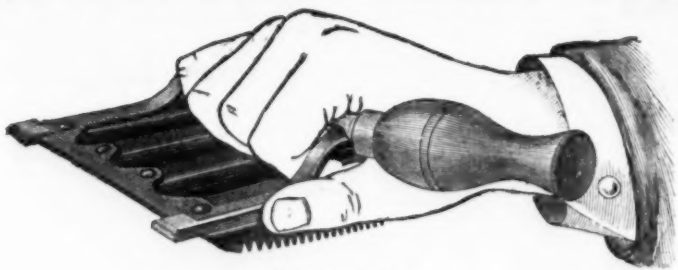
We discovered the necessity of something better, and provided the needed improvement, and by dint of persevering industry and constant endeavor to maintain a standard of excellence in manufacture, and integrity and impartiality in our dealings with others, we have succeeded in establishing a reputation and business, of which Mr. Hotchkiss can not rob us.

We do not propose to disturb the very friendly and satisfactory relations thus established, by exposing our customers to the vexations attendant upon a suit for damages, and while any one selling the infringing Combs is equally liable with the manufacturer, we are indisposed to punish others for Mr. Hotchkiss's transgressions. We shall, however, at once proceed to satisfy that gentleman, that although a combination of audacity and deceit may temporarily impose on some, it will never win, as against a straightforward and honest prosecution of a legitimate business.

New York, August 20th, 1877.

**LAWRENCE CURRY COMB CO.,**  
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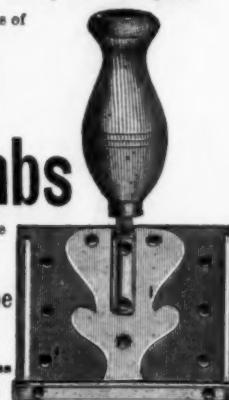
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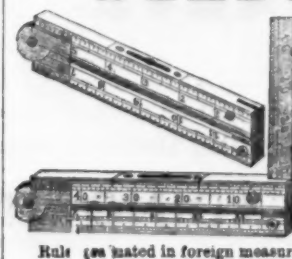
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RIVERTON, CONN.



Rule (as stated in foreign measure) to order.



# HENRY DISSTON & SONS' FILE COMPANY, Limited.

## FACTORY, Tacony, Philadelphia.

OFFICES, - Front and Laurel Streets, Philadelphia, Pa.

The question having been asked why we have gone extensively into the manufacture of Files, we wish to answer that, as we employ a very large force of Saw-Filers, and having for many years manufactured our own Files, we found that we could not get them made elsewhere equal to our own. The reason of which was that our File makers were directly in contact with the largest and most thoroughly experienced force of File users in the world; men who, from the long and constant use of Files, could at once detect the slightest difference in the cutting qualities and durability of the different Files, and can explain the essential conditions of their excellence.

This led us to the manufacture and introduction of many special Files, exactly suitable for filing our celebrated Saws of every kind.

Files for filing Saws must be made of the finest steel that can be made. The cutting must be fine and sharp; thoroughly hardened; and the shape of the File must be made to suit the particular kind of work for which it is intended.

The same is true of Files for every other purpose; and as the excellence of our Files created a large demand for them among persons using our Saws, we concluded to give the File consumers generally the benefit of the experienced and combined efforts of our File makers, and the most expert force of Saw-Filers in the world.

On page 22 we show a line of the most generally useful Files for machinists and engineers, with their proper names and the prices of the different lengths from 4 to 20 inches. Of the Flat we show the three different cuts—Bastard, Second Cut and Smooth—with the prices.

The prices of the same cuts of any of the other files can be found in our List.

On page 23 we show a line of special Files for machinists and engineers, with the prices. These special Files are made a certain width and thickness for a certain length when ordered by the name of the File, but we will make them any width or thickness to order.

These illustrations will be found valuable to the dealer and consumer, by giving the proper names of many very useful special Files that are often needed but seldom made.

We intend to conduct the manufacture of Files on the most scientific and systematic principles that have ever yet been attempted in File making.

### HENRY DISSTON & SONS' FILE CO., Limited.

JULY, 2nd, 1877.

FACTORY, Tacony, Pa.

#### REVISED PRICE LIST.

# HENRY DISSTON & SONS' FILE COMPANY, Limited.

Front and Laurel Sts., PHILADELPHIA, PA.

Mill, Round, Flat and Square.				Hand and Half Round.				Taper Saw Files.				Pit Saw Files.	Inch	Cabinet Files and Rasps.	Flat & Half Round Wood Rasps.	Plain Horse Rasps.	Tanged Horse Rasps.	Hook Saw Files.	Half Round Shoe Rasps.
Inch	Bastard.	2nd Cut	Smooth	Inch	Bastard.	2nd Cut.	Smooth.	Inch	Single Cut.	Double Cut.	Slim Tapers.								
4	1 40	1 60	1 75	4	1 60	1 80	2 00	3	95	1 50			6	3 00	2 55			2 45	2 25
5	1 60	1 85	2 10	5	1 90	2 15	2 40	3½	95	1 50			7	3 50	3 00			3 00	2 75
6	1 85	2 20	2 50	6	2 25	2 55	2 80	4	1 08	1 65	1 20	1 45	8	4 00	3 50			3 40	3 25
7	2 20	2 60	3 00	7	2 65	3 00	3 35	4½	1 20	1 90		1 60	9	5 00	4 20			4 25	4 00
8	2 60	3 05	3 50	8	3 10	3 50	3 90	5	1 35	2 25	1 40	1 80	10	6 00	4 90	4 20	5 38	5 00	4 75
9	3 00	3 65	4 15	9	3 60	4 10	4 55	5½	1 65	2 60		2 10	11	7 00	5 70	4 90	6 25	6 00	5 75
10	3 65	4 30	4 90	10	4 25	4 75	5 25	6	1 90	3 00	1 75	2 35	12	8 00	6 50	5 75	7 50	6 75	6 75
11	4 35	5 10	5 70	11	5 00	5 50	6 10	7	2 40	3 60	2 20	2 80	13	9 50	7 70	6 70	9 00		
12	5 25	6 00	6 60	12	5 75	6 40	7 00	8	3 00	4 50	2 75	3 40	14	11 00	9 00	7 80	10 75		
13	6 10	7 00	7 70	13	6 75	7 70	8 60	9	3 90	5 50	3 30	4 00	15	13 00	10 50	8 90	12 50		
14	7 30	8 25	9 00	14	8 00	9 10	10 30	10	5 00	6 60	4 00	5 00	16	15 00	12 00	11 00	15 00		
15	8 75	9 75	10 50	15	9 50	10 70	12 10	11	6 10	8 00	5 00	6 25							
16	10 50	11 50	12 50	16	11 25	12 50	14 00	12	7 25	9 50	6 25	7 50							
17	12 50	13 50	14 75	17	13 25	14 50	16 00												
18	14 75	16 75	17 75	18	15 50	16 75	18 25												
20	20 00	23 00	25 00	20	22 00	25 00	28 00												

#### EXTRAS.

All Dead Smooths double the price of Bastard Cut.  
Half inches not specified, take the even inch next higher.  
Wardings take the Flat list.  
Coarse and Middle Cuts same as Bastard.

Gin Saw take Taper Double Cut list.  
Knife and Pillar take the Hand list.  
Blunt, Equaling, Union Cut, Mill Double Cut, Mill with Two Round Edges, and Beveled Edge Horse Rasps, advance one inch on their respective kinds.

See pages 22 and 23 for the general standard Files.

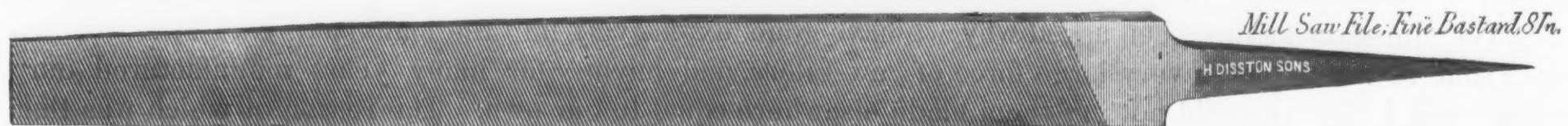


# HENRY DISSTON & SONS' FILE COMPANY, Limited.

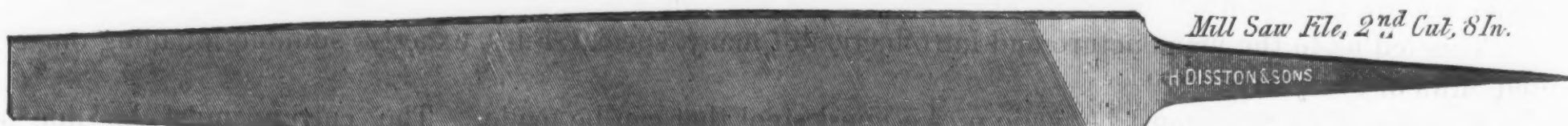
## Standard Files for Machinists and Engineers.

ALL LENGTHS KEPT IN STOCK OR MADE TO ORDER.

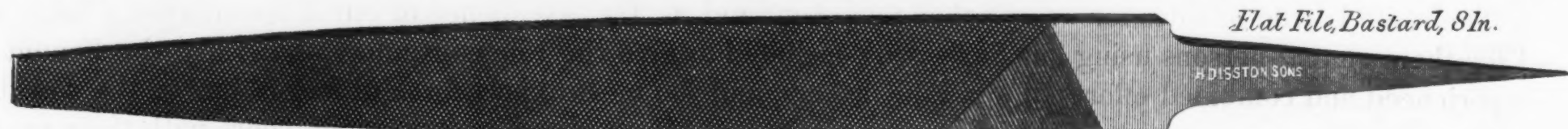
Regular Standard Files for Machinists and Engineers.



Size,	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20 Inch.
Price,	\$1 40	1 60	1 85	2 20	2 60	3 00	3 65	4 35	5 25	6 10	7 30	8 75	10 50	12 50	14 75	20 00



Size,	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20 Inch.
Price,	\$1 60	1 85	2 20	2 60	3 05	3 65	4 30	5 10	6 00	7 00	8 25	9 75	11 50	13 50	16 75	23 00



Size,	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20 Inch.
Price,	\$1 40	1 60	1 85	2 20	2 60	3 00	3 65	4 35	5 25	6 10	7 30	8 75	10 50	12 50	14 75	20 00



Size,	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20 Inch.
Price,	\$1 60	1 85	2 20	2 60	3 05	3 65	4 30	5 10	6 00	7 00	8 25	9 75	11 50	13 50	16 75	23 00



Size,	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20 Inch.
Price,	\$1 75	2 10	2 50	3 00	3 50	4 15	4 90	5 70	6 60	7 70	9 00	10 50	12 50	14 75	17 75	25 00



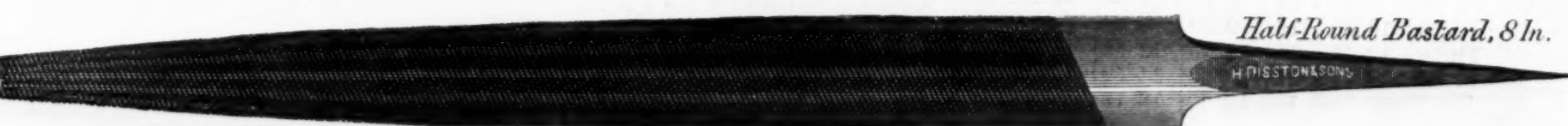
Size,	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20 Inch.
Price,	\$1 40	1 60	1 85	2 20	2 60	3 00	3 65	4 35	5 25	6 10	7 30	8 75	10 50	12 50	14 75	20 00



Size,	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20 Inch.
Price,	\$1 40	1 60	1 85	2 20	2 60	3 00	3 65	4 35	5 25	6 10	7 30	8 75	10 50	12 50	14 75	20 00



Size,	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20 Inch.
Price,	\$1 60	1 90	2 25	2 65	3 10	3 60	4 25	5 00	5 75	6 75	8 00	9 50	11 25	13 25	15 50	22 00



Size,	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20 Inch.
Price,	\$1 60	1 90	2 25	2 65	3 10	3 60	4 25	5 00	5 75	6 75	8 00	9 50	11 25	13 25	15 50	22 00

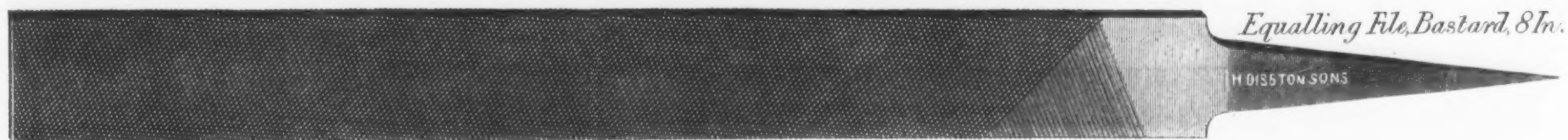
The prices of the different cuts of Round, Square, Hand, and Half Round will be found by referring to our New List.



# HENRY DISSTON & SONS' FILE COMPANY, Limited.

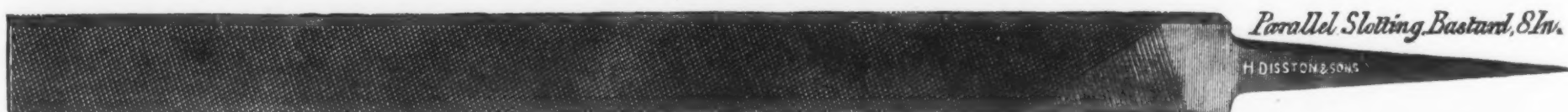
## Special Files for Machinists and Engineers.

ALL LENGTHS KEPT IN STOCK OR MADE TO ORDER.



*Equalling File, Bastard, 8 In.*

Price advance one inch on the price of Flat Bastard.



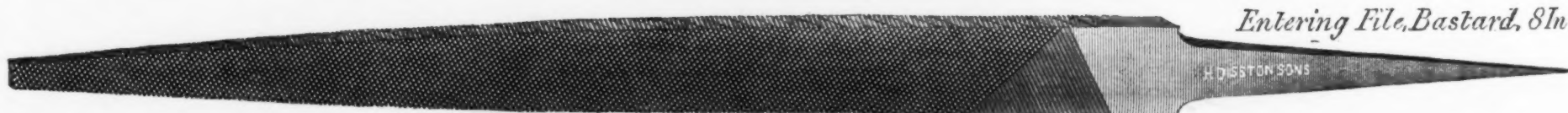
*Parallel Slotting File, Bastard, 8 In.*

Price same as Flat Bastard.



*Pillar File, Bastard, 8 In.*

Price same as Hand Bastard.



*Entering File, Bastard, 8 In.*

Price advance one inch on Flat Price.



*Parallel Cutter, Bastard, 8 In.*

Price same as Flat Bastard.



*Taper Cutter, Bastard, 8 In.*

Price same as Flat Bastard.



*Three-Square File, Bastard, 8 In.*

Price same as Hand Bastard.



*Knife File, Bastard, 8 In.*

Price same as Hand Bastard.



*Cant File, Bastard, 8 In.*

Advance two inches on Flat Price, except when made single cut for filing saws we have a special price.

The prices of the different cuts will be found on our new Price List.

Special Files for Machinists and Engineers.

Special Files for Machinists and Engineers.

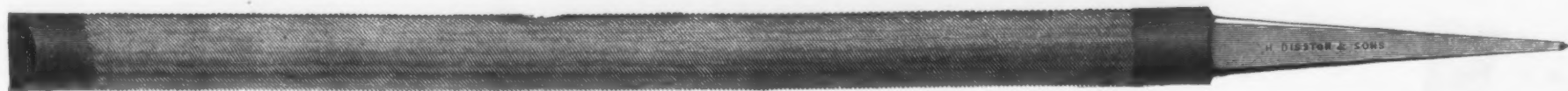


# HENRY DISSTON & SONS' FILE COMPANY, Limited.

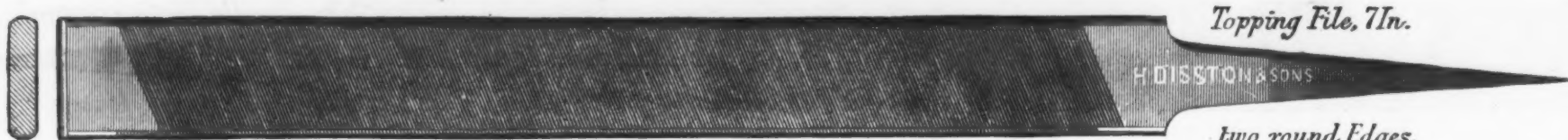
## Wood Saw Files.

*Gulleting File, 6In.*

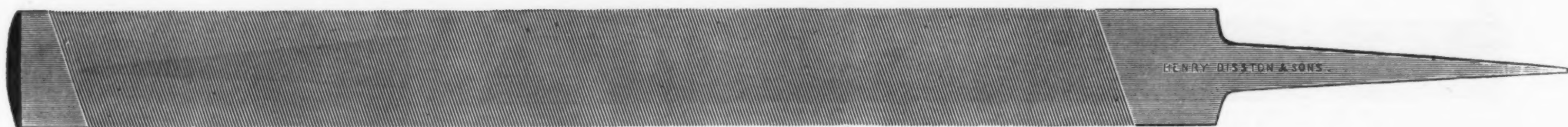
See Price List.

**PIT SAW FILE.**

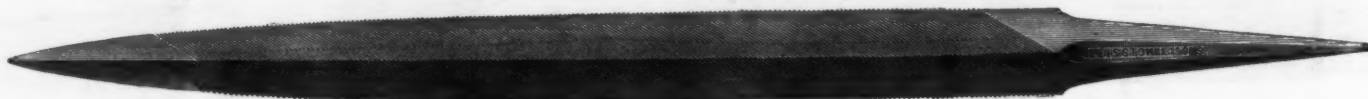
See Price List.

*Topping File, 7In.**two round Edges.*

Price advance two inches on the Price of Mill.

**HALF ROUND, BLUNT, SAFE BACK, FOR BEVELING CROSS-CUT TEETH.**

Price as Half Round 2nd Cut.

**TAPER FILE.**

See the Taper Saw File List.

**LITTLE WONDER.**

Complete. Patented Sept. 2nd and Sept. 16th, 1873.

3½ in., \$2 02; 4½ in., \$2 34; 5 in., \$2 51; 5½ in., \$2 85; 6 in., \$3 17; 6½ in., \$3 50; 7 in., \$3 83.

## WOOD SAW FILES,

Manufactured by the

### H. Disston & Sons File Co., Limited.

TACONY, PA.

Offices, Front &amp; Laurel Sts., PHILADELPHIA, PA.

**ROUND TAPER FILE.**  
Price same as Round Smooth.

**PIT SAW FILE.**  
See Price List.

**CORRUGATED TAPER FILE.**  
Advance one inch on Taper Saw File.

*Henry Saw File, 5In.*

**See Taper Saw File Price List.**

**See Taper Saw File Price List.**

**Price advance two inches on Taper price.**

*Taper Saw File, 4½In.**Band Saw File.*

See Taper Saw File List.

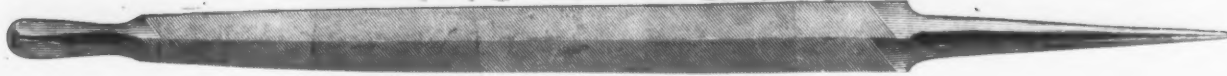
See pages Nos. 23 and 24 for generally useful Files.



# HENRY DISSTON & SONS' FILE COMPANY, Limited.

## Wood Saw Files.

### DISSTON CHOICE TAPER.

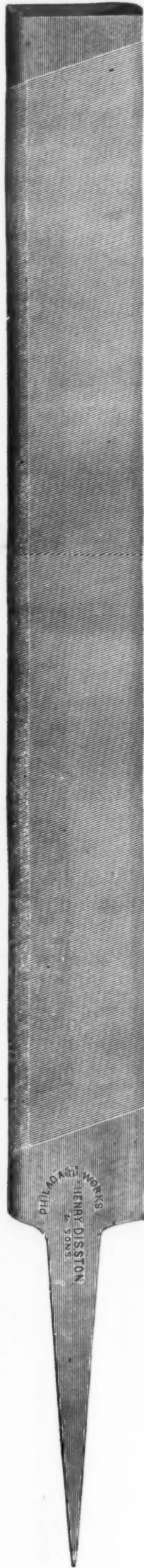


Price same as Regular Taper, length to include the Tip.

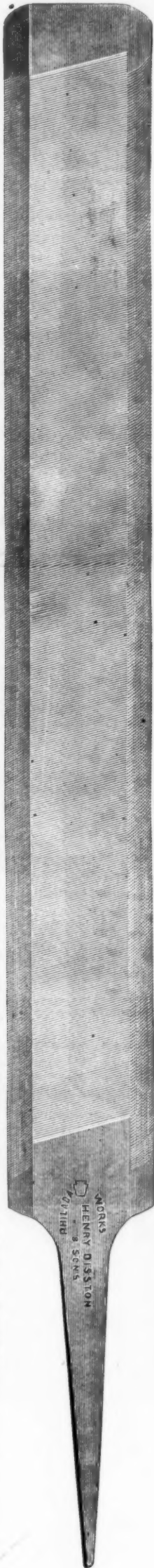


### MILL FILE.

Price same as Regular Mill.

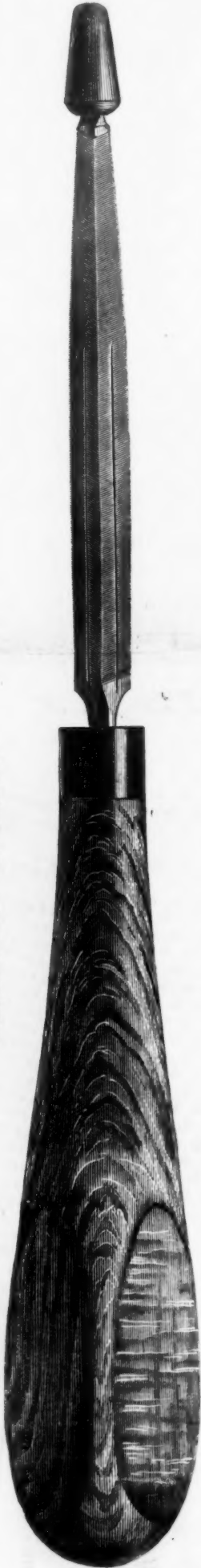


### ELLIPTIC EDGE MILL FILE, ADAPTED TO LUMBERMAN CROSS-CUT SAWS.



### ELLIPTIC EDGE MILL FILE, ADAPTED TO GREAT AMERICAN CROSS-CUT SAWS.

6 in., \$3 05; 7 in., \$3 75; 8 in., \$4 23; 9 in., \$5 31; 10 in., \$6 25; 11 in., \$7 50; 12 in., \$8 44; 13 in., \$10 31.



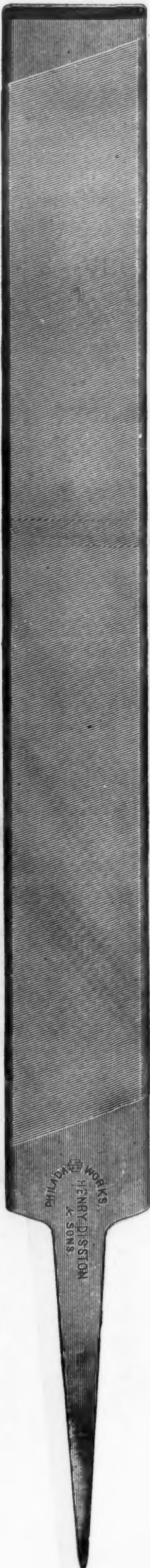
### LITTLE WONDER.

Complete. Patented Sept. 2nd and Sept. 16th, 1873.

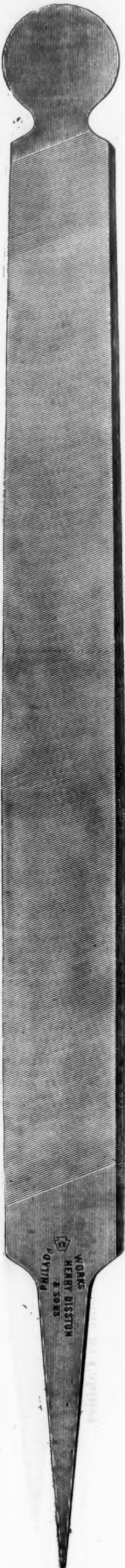
3 1/2 in., \$2 02; 4 in., \$2 18; 4 1/2 in., \$2 34; 5 in., \$2 51; 5 1/2 in., \$2 85; 6 in., \$3 17; 6 1/2 in., \$3 50; 7 in., \$3 83.



### SULLETTING FILE, 10 In.



### DOUBLE ROUND EDGE MILL FILE, ADAPTED TO GREAT AMERICAN CROSS-CUT SAWS.



### DISSTON'S CHOICE MILL FILE.

Price same as Common Mill, measuring the Tip.

See pages 23 and 24 for generally useful Files.



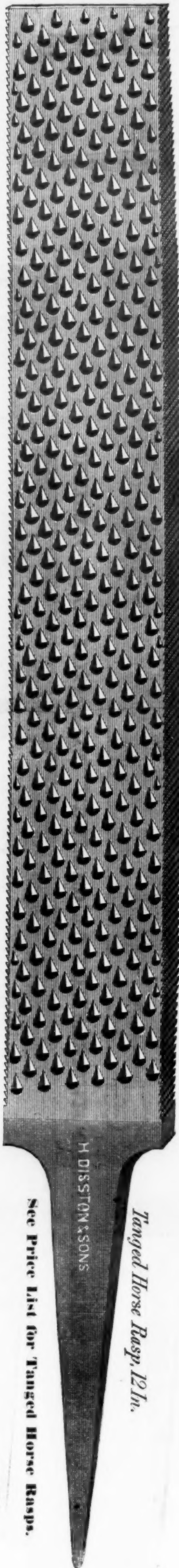
# HENRY DISSTON & SONS' FILE COMPANY, Limited.

## Rasps.



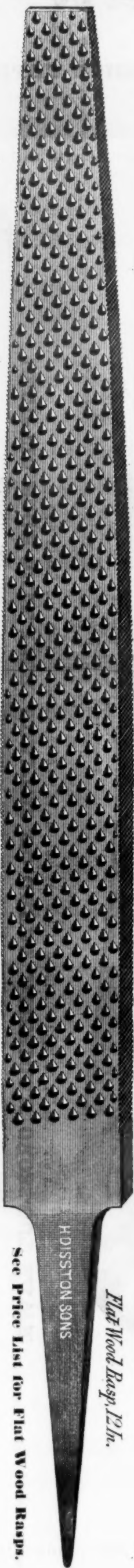
See Price List for Plain Horse Rasps.

*Double Horse Rasp, 4 1/2 in.*



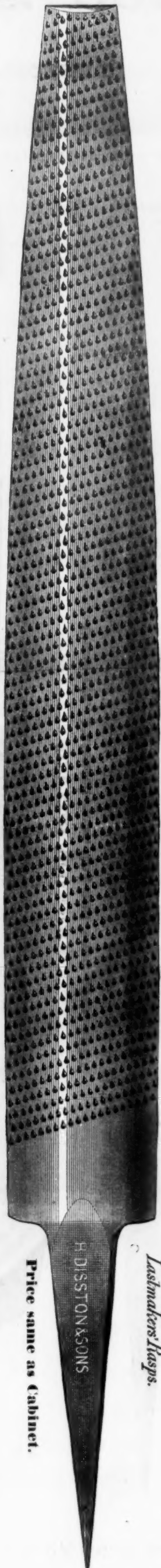
See Price List for Tanged Horse Rasps.

*Tanged Horse Rasp, 12 in.*



See Price List for Flat Wood Rasps.

*Flat Wood Rasp, 12 in.*



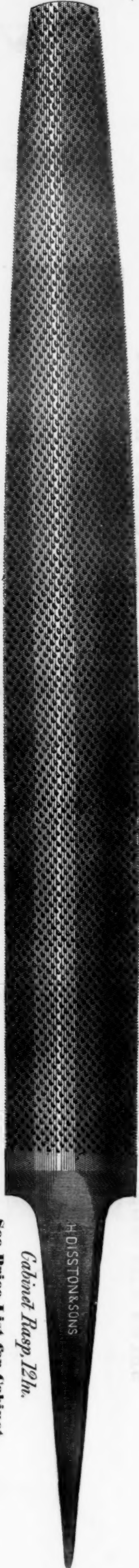
Price same as Cabinet.

*H. DISSTON & SONS*

*Lashmakers Rasps.*

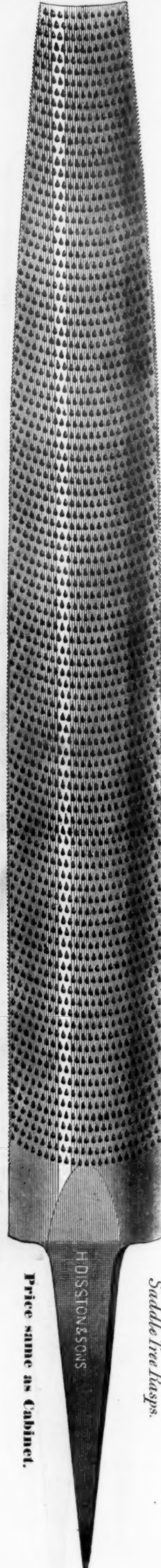
See Price List for Cabinet.

*Cabinet Rasp, 12 in.*



*H. DISSTON & SONS*

Price same as Cabinet.



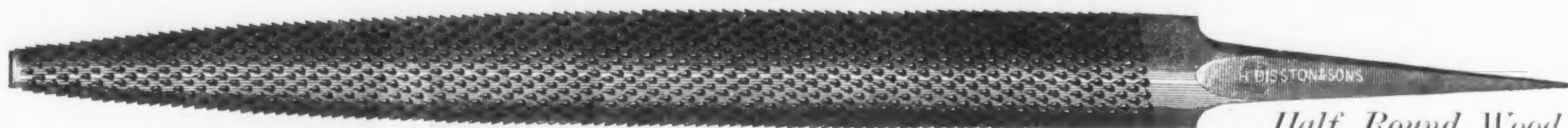
*H. DISSTON & SONS*

*Saddle Tree Rasps.*



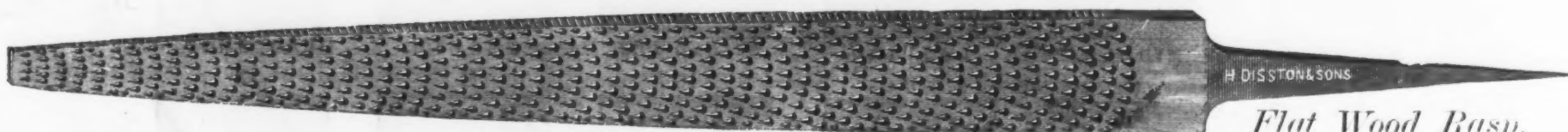
# HENRY DISSTON & SONS' FILE COMPANY, Limited.

## Miscellaneous Files and Rasps.



*Half Round Wood Rasp.*

See Price List for Half Round Wood Rasps.



*Flat Wood Rasp.*

See Price List for Flat Wood Rasps.



*Round Rasp, 8In.*

See Price List for Flat and Half Round Wood Rasps.



*Flat Bone File, 8In.*

Price same as Flat Bastard.



*Flat File, Rough, 8In.*

Price same as Flat Bastard.



*Mou ingMachine - Swaged.*

Price advance three inches on Flat Price.



*Horse Mouth Rasp*

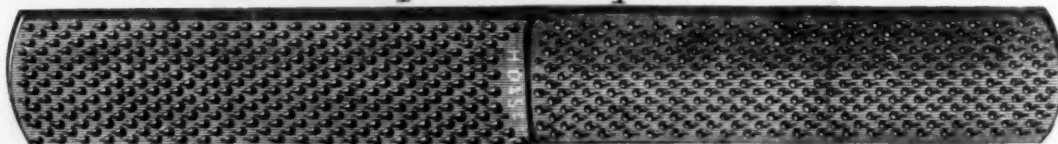
Price same as Flat, including length of shank.



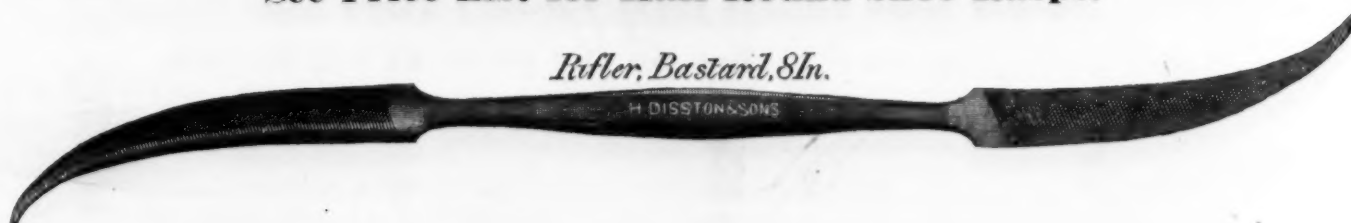
*Shoe Rasp, 8In.*

See Price List for Half Round Shoe Rasps.

*Improved Shoe Rasp, 6In.*



See Price List for Half Round Shoe Rasps.



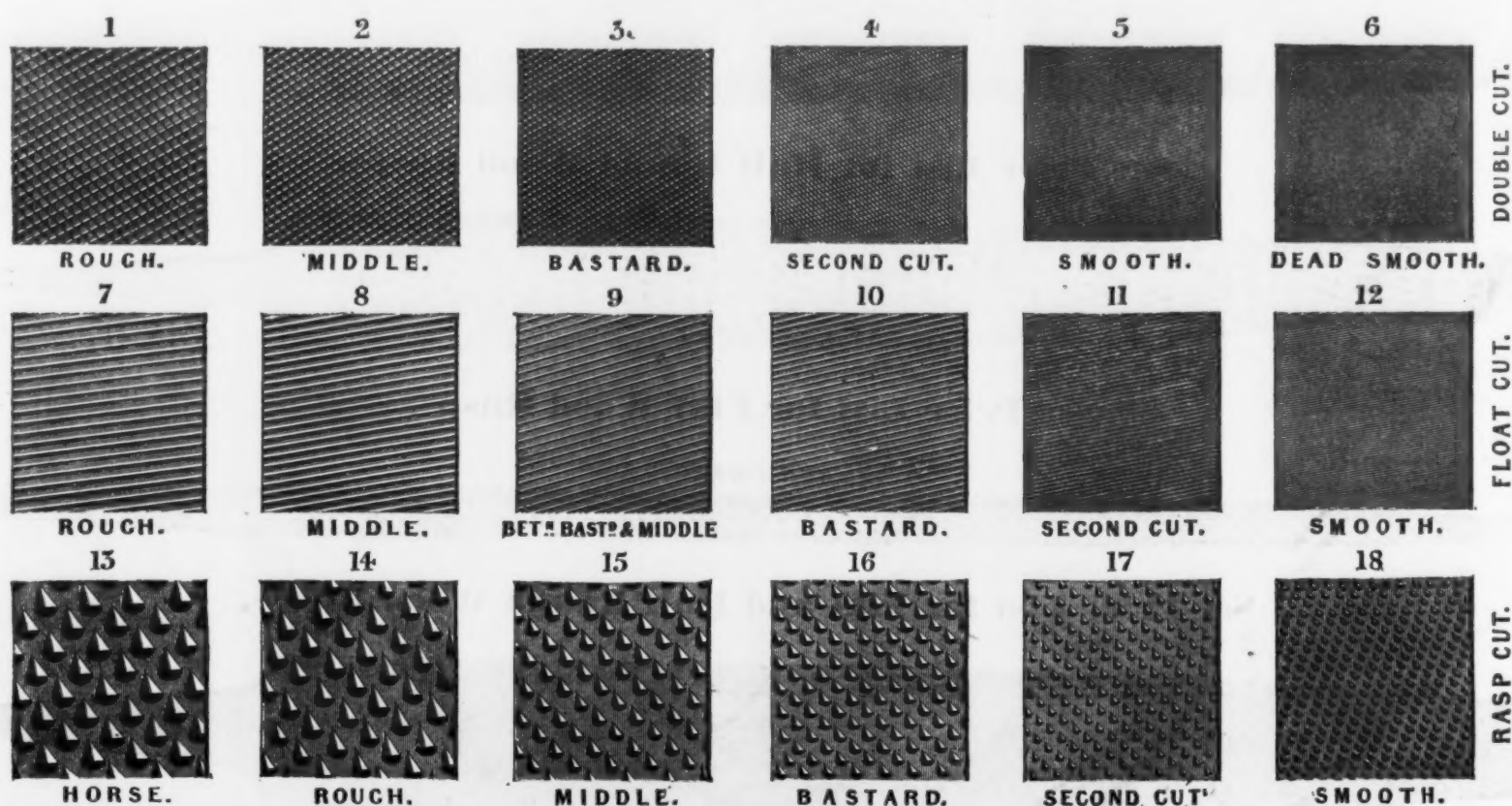
*Rifler, Bastard, 8In.*



# HENRY DISSTON & SONS' FILE COMPANY, Limited.

## ILLUSTRATIONS OF THE VARIOUS CUTS OF FILES, SMOOTHS, FLOATS AND RASPS.

The following cuts are engraved from Files 12 inches long; if longer than 12 inches the cuts will be larger; if smaller, they will be less in proportion.



## MISCELLANEOUS SPECIAL FILES MADE TO ORDER.



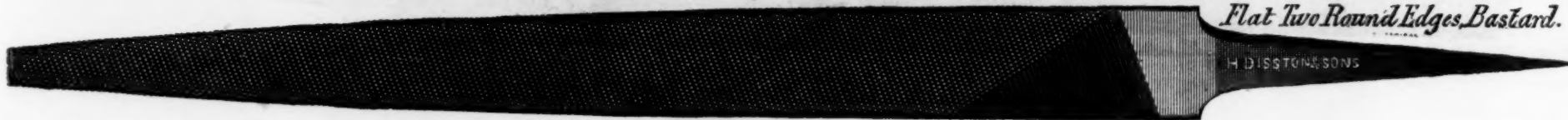
*Pin File, Smooth, 8 In.*

Price advance one inch on Hand Smooth.



*Needle File, Smooth, 8 In.*

Price advance one inch on the price of Hand Smooth.



*Flat Two Round Edges, Bastard.*

Price advance two inches on the price of Flat.



*Arch File, Bastard, 8 In.*

Price advance three inches on the price of Flat.



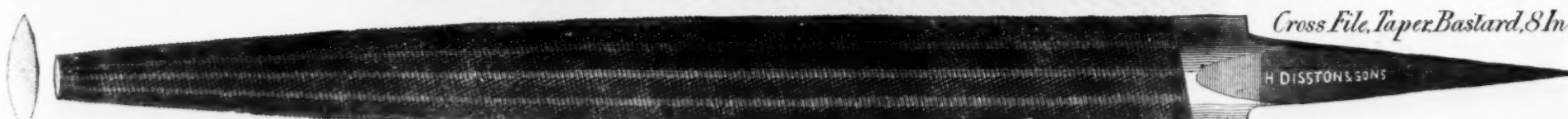
*Flat Poltance File, Bastard, 8 In.*

Price advance one inch on the price of Flat.



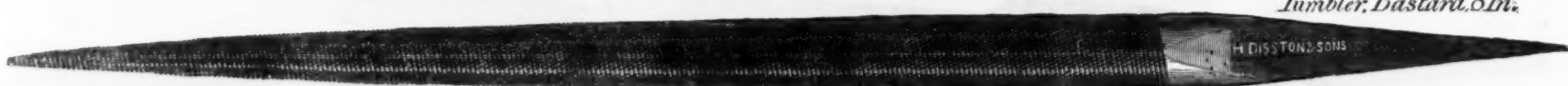
*Feather Edge Parallel Bastard, 8 In.*

Price advance three inches on the price of Flat.



*Cross File, Taper Bastard, 8 In.*

Price advance two inches on the price of 1-2 Round.



*Tumbler, Bastard, 8 In.*

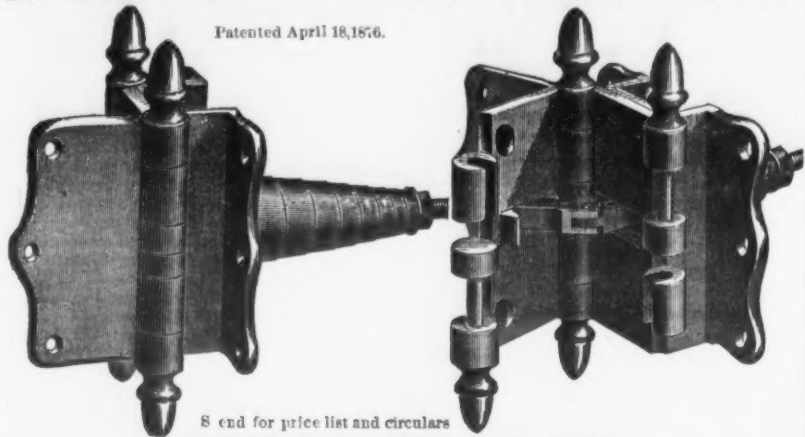
Price advance two inches on the price of Round.

See Price List for the Prices of the different Cuts.



## PATENT DOUBLE ACTING SPRING BUTTS.

Patented April 18, 1876.



Send for price list and circulars

FOR SWINGING DOORS BOTH WAYS.

These Butts are the first ever constructed with two leaves only, and with flanges attached thereto for fastening to the door and casing, thus rendering them much more substantial and easy to put on, as the screws are all driven from the outside. By means of the flange the door is hung firmly to the casing. Instead of a strip of iron as in the case with all other double acting Butts, and the screws do not become loose, as the strain on them is much less. On the back of the Butt is a powerful coiled spring, and draws it direct line with the center of the door, thus holding the door firmly in position, and obviating all sag. Our price list is from 25 to 40 per cent. lower than others. Manufactured by

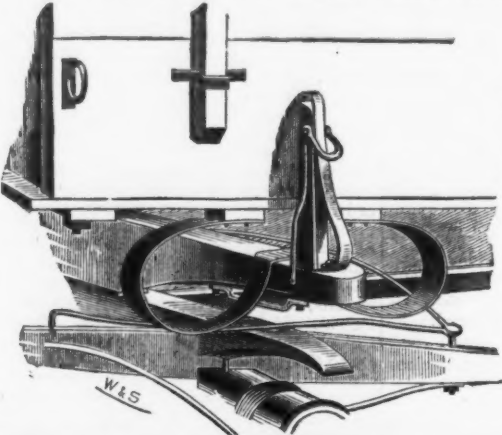
THE SABIN MFG. CO., Montpelier, Vt.

SOMETHING NEW.

## BOLSTER SPRINGS

For Farm and Lumber Wagons.

Pulliam's Patent.



Made of the best steel, and warranted. Will fit wagons of any size. Are attached by four bolts through the bottom of the bed. Lift off the gear with the bed. Designed to remain on the wagon for all kinds of work. Operates equally well whether on a loaded or empty wagon. Saves largely in wear and tear. Removes necessity of spring seat. Affords comfortable riding for from one person to a wagon load. Price, per set of four springs, \$6.50. Liberal margin to Wagon Manufacturers and Dealers. Correspondence solicited, and circulars furnished.

Semple &amp; Birge Mfg. Co.

ST. LOUIS.

Parkhurst & Wilkinson,  
CHICAGO.

NORTHWESTERN

## HORSE NAIL CO.

ESTABLISHED IN 1862.

## Hammered &amp; Finished Horse Nails.

We offer our Finished Nail to the trade with the confidence that it has no equal in the market. It is the genuine "Northwestern" Nail, Finished, and we give it our unqualified guaranty.

Office and Factory, 56 to 68 Van Buren St., Chicago.

A. W. KINGSLAND, Secretary.

Our agents, Graham & Haines, 123 Chambers Street, New York, carry a full line of our goods, and will be pleased to serve you at Factory prices.

## GLOBE NAIL COMPANY,

MANUFACTURERS OF

## Pointed Polished &amp; Finished Horse Shoe Nails.

Recommended by over 20,000 Horse Shoers.

All nails made from best NORWAY IRON, and warranted perfect and ready for driving. Orders filled promptly and at lowest rates by

GLOBE NAIL CO., Boston, Mass.

## THE FOWLER NAIL CO.,

SEYMOUR, CONN., Manufacturers of

## THE VULCAN HORSE SHOE NAIL

POINTED READY FOR DRIVING.

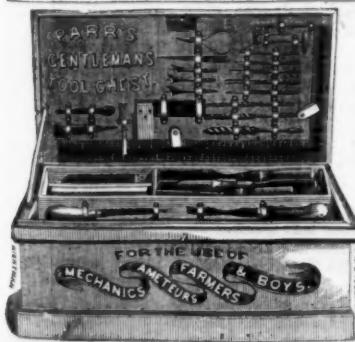
## RHODE ISLAND HORSE SHOE CO.,

OFFICE, 81 Canal Street, Providence, R. I. WORKS at Valley Falls, R. I.

Manufacturers of

PERKINS and RHODE ISLAND PATTERNS of

## HORSE AND MULE SHOES.



We are pleased to inform the trade that our facilities for the manufacture of tool chests this season cannot be surpassed. We make two qualities. The first quality is made of heavy American Black Walnut, with partitions and drawers for tools, which are ground, set and sharpened, ready for use. It is especially designed for mechanics and first-class amateurs and for all those in need of extra fine quality of tools. The tools in these chests, manufactured by ourselves, are of our best quality; and those supplied by other manufacturers are warranted their best goods. The second quality is a cheaper article and designed more especially for the jobbing and toy trade. The articles are of good quality and are designed for practical household use. Many years ago, when we were pioneers in this branch of trade, the English on first quality and the Germans on the second quality were formidable competitors and controlled the American market on those goods; but now I am exporting annually large quantities of the best quality to foreign countries, and those goods are scarcely known in this country. Parties engaged in the export trade cannot send a better specimen of American mechanics tools, than by procuring one of our chests, branded Geo. Parr, Consult your interest by sending for illustrated catalogue and revised price list to

GEORGE PARR, Buffalo, N. Y.

## BAEDER, ADAMSON &amp; CO.,

Manufacturers of SAND &amp; EMERY PAPER &amp; EMERY CLOTH.

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WHITE MOUNTAIN,  
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stones gotten up or labeled in  
any style desired. Price and  
quality guaranteed.  
Our Stone are of good keen  
grit and will not glaze.



## EUREKA SAFETY POWER!



Practically impossible to  
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grind 2 inch assumed oak—grinds  
bushels Corn per hour. Price  
\$250. Also, Stationary Engines  
and Boilers and Spark Arrest-  
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Light and heavy Steel Castings of superior  
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COAL WASHING MACHINES AND  
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Civil and Mechanical Engineer,  
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EQUAL TO THE BEST IN THE WORLD AND  
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Presses, Clay Wheels, Tile Machines, Stampers,  
Grinding Pans. Brick Yards fitted out for running  
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Durable Paint known for  
Cars, Roofs, Bridges, Iron,  
Brick and Wooden Build-  
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Iron Paint Co.,  
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OF ALL GRADES.

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HARDWARE.

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To close the business we are now offering our entire

Merchandise Stock at less than Market Rates.

Buyers are invited to call and examine our stock, or write us for particulars before  
purchasing elsewhere.

Special Inducements to Cash Purchasers.

The Commission Department of our business, until further notice, will be con-  
ducted by

MR. F. F. TENNIS,

in his name, to whom all orders should be addressed.

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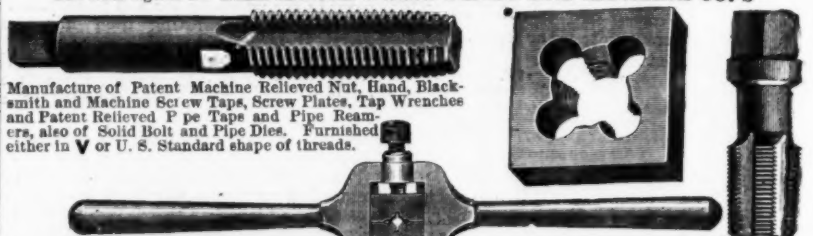
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## Gas Pliers, Pipe Tongs, etc.)

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Sole Sales Agents for THE HORSE TWIST DRILL AND MACHINE CO.'S



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COMPACT! DURABLE! POWERFUL! ECONOMICAL!  
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Piston Packing Rings.

Sizes from 1 to 12 horse-power, with Boiler on same bed-plate (semi-portable) or entirely indepen-  
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This is the best Engine to supplement water-power, as its cost is low, while its durability,  
economy and simplicity are unsurpassed.

The best Yacht or Tug Boat Engines furnished and warranted.  
Send for further information, and state where you saw this.

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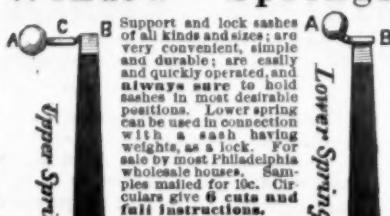
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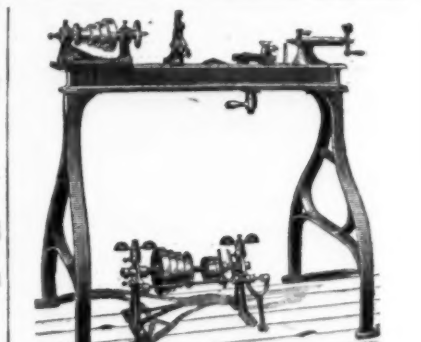
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## ISRAEL H. JOHNSON, JR. &amp; CO.,

TOOL &amp; MACHINE WORKS,

Manufacturers of Engine, Brass Finishers', Wood Turn-  
ers', Amateurs and Jewelers' LATHES.Slide Hoes, Screw Machines, Terret Heads, Screw  
Presses, Screw Clamps, Lathe Carriers, &c.

440 N. 12th St., above Noble, Philadelphia, Pa.

Israel H. Johnson, Jr., Joshua H. Johnson, Jr.



# Trade Report.

Office of THE IRON AGE,  
WEDNESDAY EVENING, AUG. 22, 1877.

The past week has been chiefly noteworthy in the financial markets for a large and active speculation in stocks, with a consequent advance in prices. The telegraph war has resulted, as was expected, in an arrangement whereby competition in future is guarded against. The Western Union and Atlantic and Pacific companies have agreed to pool and divide their earnings—the former taking 87½ per cent. and the latter 12½ per cent. of the total. This agreement is for 20 years.

The money market has been more active. The rates on call advanced to 4 @ 5 per cent., and on prime mercantile paper to 5 @ 7 per cent.

The gold market has been heavy and the premium has tended downward. The following table shows the daily range of the premium:

	Highest.	Lowest.
Thursday.....	105½	105½
Friday.....	105½	105½
Saturday.....	105½	105½
Monday.....	105½	105½
Tuesday.....	105½	105½
Wednesday.....	105½	105½

Government bonds continued steady until the end of last week, when there was a fractional decline.

State Bonds have been very dull, but fairly steady; Railway Mortgages strong and buoyant.

The Stock Market has been irregular, but in the main strong, with an upward tendency. The principal dealings have been in Western Union, Lake Shore, N. Y. Central, Delaware, Lackawanna and Western, Michigan Central and Central Pacific.

The changes in the bank averages during the week result in a reduction in the surplus reserve from \$14,267,000 to \$12,792,050. The following is a comparison of the averages for the past two weeks:

	Aug. 11.	Aug. 18.	Differences.
Loans.....	\$745,377,000	\$743,876,300	Dec. 1,480,700
Specie.....	13,030,700	13,449,700	Dec. 1,581,000
Legal Tndrs.....	53,094,800	53,696,000	Dec. 398,000
Deposits.....	15,431,600	15,314,600	Dec. 2,017,000
Circulation.....	15,689,500	15,545,900	Dec. 143,600

The following tables show the foreign trade movements for the week:

Imports.			
	1875.	1876.	1877.
Total for week.....	\$7,600,230	\$5,179,595	\$7,275,317
Prev. reported.....	220,534,770	183,514,017	208,515,043
Since Jan. 1.....	\$228,135,000	\$190,694,212	\$215,790,359

Included in the imports of general merchandise were articles valued as follows:

	Quantity.	Value.
Brass goods.....	37	\$472
Bronzes.....	10	4,260
Chains and Anchors.....	3	1,207
Cutlery.....	99	34,800
Gas fixtures.....	1	66
Guano.....	13	2,238
Iron, pig, tons.....	240	5,412
Iron cotton ties.....	102	338
Iron tubes.....	722	1,197
Iron, other, tons.....	104	12,845
Lead, pigs.....	3,900	21,048
Metal goods.....	103	10,700
Nails.....	3	833
Needles.....	15	6,459
Old metal.....	1	4,440
Platina.....	1	3,959
Per. caps.....	2	207
Saddlery.....	2	7,569
Steel.....	24	199,580
Tin, bks.....	234,540	34,017
Tin, 2½ lbs. slabs.....	42	1,691
Wire.....	1	1,691

EXPORTS, EXCLUSIVE OF SPECIE.

	1875.	1876.	1877.
Total for week.....	\$4,997,353	\$5,163,132	\$5,781,979
Prev. reported.....	158,235,789	164,609,194	171,834,064
Since Jan. 1.....	\$163,233,144	\$169,772,324	\$177,616,043

EXPORTS OF SPECIE.

	1875.	1876.	1877.
Total for week.....	\$21,853,461	\$21,853,461	\$21,853,461
Same time in 1876.....	39,058,742	39,058,742	39,058,742
Same time in 1875.....	63,232,403	63,232,403	63,232,403
Same time in 1874.....	39,624,471	39,624,471	39,624,471
Same time in 1873.....	38,825,230	38,825,230	38,825,230
Same time in 1872.....	55,840,441	55,840,441	55,840,441

Government bonds closed quiet and lower, as follows:

	Bid.	Asked.
U. S. Currency 6's.....	124½	124½
U. S. 6's 1881 registered.....	110½	110½
U. S. 6's 1881 coupon.....	110½	110½
U. S. 6's 1885 new reg.....	106½	106½
U. S. 6's 1885 coupon.....	106½	106½
U. S. 6's 1887 reg.....	108½	108½
U. S. 6's 1887 coupon.....	108½	108½
U. S. 6's 1889 reg.....	110½	110½
U. S. 6's 1889 coupon.....	110½	110½
U. S. 6's 1890 reg.....	110½	110½
U. S. 6's 1890 coupon.....	110½	110½
U. S. 10-40 reg.....	109	109
U. S. 10-40 coupon.....	113½	113½
U. S. 5's 1881 registered.....	109½	109½
U. S. 5's 1881 coupon.....	109½	109½
U. S. 4½'s 1891 registered.....	107	107
U. S. 4½'s 1891 coupon.....	108	108
U. S. 4's 1897 registered.....	104½	104½

The following were the closing quotations of active shares:

	Bid.	Asked.
Atlantic and Pacific Telegraph.....	20½	21
Chicago and Northwest.....	30½	31
Chicago, Rock Island and Pacific.....	99½	99½
Chicago, Bur. and Quincy.....	102	102
Col. Chic. and Ind. Cent.....	2½	2½
Clev. Col. Cin. and Ind.....	27½	27½
Cleveland and Pittsburgh.....	79	80
Chicago and Alton.....	85	87
Consolidated Coal.....	21	21
Canton.....	17	20
Delaware, Lack. and Western.....	47½	47½
Delaware and Hudson.....	47½	47½
Express-Adams.....	94	94
Express-American.....	43	45½
United States.....	43½	44½
Wells, Fargo & Co.....	84	84
Erie.....	10½	10½
Harlem.....	21	25
Hannibal and St. Joseph.....	11	12
Illinois Central.....	61	61½
Lake Shore.....	62½	62½
Michigan Central.....	53½	53½
Morris and Essex.....	74½	74½
Milwaukee and St. Paul.....	65	65
New York Central.....	99½	99½
New Jersey Central.....	17½	17½
Ohio and Mississippi.....	4½	4½
Pacific Mail.....	23½	23½
Panama.....	114	114
Pittsburgh and Fort Wayne.....	88	88½

## MINING STOCKS.

Mr. Ogden Haight, No. 65 Wall street, sends us the following report of the business of the New York Mining Stock Exchange for the week ending Aug. 22:

	Closing Quotations.	Shares Sold.
Alpha.....	11½	200
American Flag.....	19	7,900
Belcher.....	5.50	12,800
Bertha & Edith.....	1.25	10
Best & Belcher.....	16.75	10
Bobtail.....	1.75	90
Bullion.....	7.12½	250
Caledonia.....	3.87½	100
California.....	29.75	185
Chollar Potosi.....	36	10
Cleveland.....	6	2,200
Consolidated Imperial.....	1.12½	300
Consolidated Virginia.....	31.62½	50
Confidence.....	5.00	100
Crown Point.....	4.12½	300
Eureka.....	43.75	950
Eschschuer.....	6.62½	100
Gould & Curry.....	9.12½	100
Hale & Norcross.....	4.62½	300
Hukill.....	1.12½	200
Julia Consolidated.....	9.37½	800
Justice.....	5.50	7,500
Kentucky.....	26	1,800
Lacrosse.....	2.25	100
Leopard.....	6.12½	100
Merrimac.....	10.50	900
Mexican.....	4.75	15,700
Moore.....	2.00	204
New York & Colorado.....	19.25	100
Northern Belle.....	21.50	100
Ontario.....	17.00	1,000
Ophir.....	24.50	395
Raymond & Ely.....	15.62½	100
Savage.....	6.87½	100
Seaton.....	70	1,800
Segregated Belcher.....	34.87½	100
Sierra Nevada.....	4.12½	100
Union Consolidated.....	5.25	100
Union Consolidated of Tenn.....	15.50	400
Yellow Jacket.....	10.45	375

The New York Mining Stock Exchange have printed in the form of a circular the following preamble and resolutions, which are of interest to all having business relations with that body:

Whereas, The New York Mining Stock Exchange, organized as a market for mining, manufacturing and insurance stocks, was especially designed to meet the public requirements in the purchase and sale of the stocks of mining companies located east of the Sierra Nevadas, and which, for the most part, have heretofore had no registered market:

Resolved, That the policy of this Exchange in "listing" mining stocks be recorded as follows, viz.:

1st. It is the policy of the Exchange to offer its facilities for securities already having recognized market value; and further, for those that from the character of their ownership, management, distribution of interest and financial condition present evidence to the Exchange that a legitimate demand for the purchase and sale of their stock needs the facilities of the Exchange for an open market.

2d. It is the duty of the Stock Committee, when reporting favorably to the placing of a mining stock on the "list" of the Exchange, to assign to the list for "daily call" mines in actual operation, and to the "free list" (to be called up on offers) mines in course of development with developing capital provided. Mining properties, organized, but without the provision of paid in working capital, may be recorded on the "free list" as mining properties.

In all cases of mining properties not previously marketed, the committee will investigate the character of the ownership and directory of the company and receive certified statement of titles and financial condition (on file, open to members); they shall investigate the good faith of the management in the provision for and prosecution of the business of operating their mines and works.

3d. By the admission of stocks to the "call list" of the Exchange, there is no implied warranty or commitment as an association to the value or profitability, present or prospective, of any corporation whose stock is "listed."

The par value of the capitalization of mines has very generally been an arbitrary matter, and whether based upon cost, revenue or anticipations, must be a matter of public criticism and judgment. The "listing" of a stock gives no official expression regarding its capitalization. The price of its shares in market furnish the only indications of value, and upon such prices, and not on the incorporated share values, are the commissions in the Exchange established.

All stocks newly "listed" must fulfill the requirements of the Exchange through its committee, and although the association disclaims any official commitment as to the valuation of properties, still its investigation of corporate status will furnish one safeguard against fraud, and the fact that the membership of the Exchange includes the most experienced men in our community in the mining business, and possessing expert connections, gives facilities of individual inquiry and criticism not heretofore available by investors on the private presentation of mining interests to their notice.

Attest: J. WYMAN MORRIS, Secretary.

No business of much account has been done during the past week, owing to absence of interest on the part of operators and to continued want of confidence on the part of the public. Moore continues to grow stronger on favorable reports from the mine, of ore on hand for payment of dividend. Bertha and Edith closes at about the same price as when put upon the board two weeks ago. Lacrosse is weaker, selling down to 35c. per share. American Flag steady at 10c. Bobtail stock is stronger owing to company's profits of over \$20,000 during the past month. It now sells for \$1.75 to \$2. Hukill is lower. Ontario quiet.

## GENERAL HARDWARE.

Business, so far as its volume is concerned, continues to be satisfactory to the trade, but a great deal of complaint is heard regarding the demoralization which exists in certain lines of goods. Locks, Butt Hinges and Cast Iron goods in general are being offered at irregular prices, a state of things which is alike unsatisfactory to the buyer and the seller.

The manufacturers of Stamped Tinware held a meeting in this city last week, at which the combination was reorganized and some changes in lists and discounts were made. The list for Dust Pans, both plain and japanned, was advanced to \$19 for I. C. and \$21 for I. X. The list for Stamped Scoops, Nos. 2 to 5, inclusive, was advanced \$1 per dozen, and is as follows: No. 2, \$4; No. 3, \$4.50; No. 4, \$5.50; No. 5, \$7.50 per dozen. The regular discount off the list of Common Stamped Ware is 35 per cent., and Deep Stamped Ware 45 per cent. These revised prices went into effect on the 16th inst., and the market is reported firm in its tone.

Hermann Boker & Co., proprietors of the Trenton Vise and Tool Works, are now prepared to furnish to the trade "Trenton Wrought Iron Anvils." Steel face, Peter Wright's pattern, which they guarantee equal to the celebrated Peter Wright's brand. Their stock on hand of these goods comprises assorted sizes from 100 to 180 pounds. These Anvils will be protected by their trade-mark, an elongated diamond with the word "Trenton" on its face.

The Nail manufacturers held a meeting last week at which the price was advanced to \$2.50, net, for 10d., with an allowance of 10 cents per keg for lots of 200 kegs and upward drawn from any one maker in one month. We quote 10d. to 60d., \$2.50, net. Trade is generally reported quiet, although we hear of improved inquiry.

In Foreign Hardware the same activity prevails which we noticed last week; the demand is chiefly from the South and Southwest, and prices we are informed are steady, with the recent advances strictly adhered to.

At a meeting of the Silver-Plated Fork and Spoon Manufacturers, held at the Metropolitan Hotel in this city on the 16th inst., the following important action was taken. It was unanimously resolved that in future all manufacturers should designate goods made of an inferior quality of metal with the stamp "O O" immediately preceding the trade-mark, and enabling the dealer to tell at a glance what he is buying. It was also further resolved that "A" goods that were called out as seconds should be stamped with a broad arrow running through the name or trade-mark, so that such goods can readily be distinguished from perfect goods.

The Henry Diston & Sons File Co. (Limited), display in their advertisement, which occupies eight pages of this issue, the most comprehensive assortment of Files and Raps that has ever been shown in a similar manner. These illustrations will be found very valuable to the trade, as it is almost impossible, in the ordinary course and detail of the Hardware business, for the dealer to remember all the technical names, or, remembering them, to be able to recall the various shapes and styles and cuts to which such technical names refer. With these pages for reference all the mysteries of the trade are an open letter, so far as the requirements of dealers and consumers are concerned. In addition to the illustrations of Files and Raps, their revised price list of July 2, 1877, is also given, and on page 28 is shown diagrams of the various cuts of Files, Smooths, Floats and Raps, which are fully explained. The works of the company are at Tacony, on the Pennsylvania Railroad and the Delaware River, about eight miles from Philadelphia. The establishment is provided with the most improved machinery for cutting every description of Files, and the manufacturers claim for these machine-cut goods not only the greatest possible accuracy as regards the evenness of the teeth, but also all the advantages claimed for hand-cutting, so far as pertains to the angle of the tooth, &c., while in the matter of temper and stock, we are informed that nothing is left undone to produce the best goods that are possible to be made. In their introduction to the advertisement on page 21, they explain some of the reasons which induced them to embark in the File business, and to which we invite the attention of our readers. Their File Cutting Machinery is all made at the works of Henry Diston & Sons, Philadelphia. The capacity of the File Works is about 350 dozen Files per day, and with increased facilities, which are rapidly approaching completion, it is expected to materially increase the production.

Charles E. Little, No. 59 Fulton street, has issued the following revised price list of Slaters' Tools, which is subject to discount 20 per cent. He is also agent in this city for Barnes' Foot-Power Machinery, including Scroll and Circular Saws, Molding Machines, Lathes, &c., and is general agent for the "New Iron Centennial Scroll Saw."

Slaters' Hammer..... \$3.75  
" Knife..... 1.50  
" Ripper..... 1.75  
" Dressing Stake..... 1.00  
" Roofing Chisel..... 1.50  
" Splitting Chisel..... 1.50  
Assorted sizes, 12½ to 14½ inches long by 2½ to 3 inches wide.

The Penfield Block Works, Lockport, N. Y., have just issued an illustrated price sheet of their large variety of Tackle Blocks, Sheaves and Bushings. This sheet is intended for framing or to be tacked up, and shows at a glance a large variety of their work. Among their new goods they offer Wrought Iron Gin Blocks, two styles, for hemp or wire rope; Wrought Iron Dock Blocks, with universal or hinge joint and swivel, sides of plates rounded to protect rope; Sheaves, all steel roller bushed. They are the sole manufacturers of an All Steel Flange Roller Bushing for lignum vitae

sheaves. Sheets will be mailed to the trade on application. Henry B. Newhall, 11 Warren street, represents them in New York.

Bissell, Welles & Millett inform us that the Table Cutlery and Carvers to be sold at auction at their special sale of Cutlery, on Wednesday, 29th instant, will be of the manufacture of the J. Russell, Meriden, Beaver Falls, Northampton Cutlery Co.'s, Landers, Frary & Clark and White & Sansom. The line will be large and will be sold without any reserve.

Geo. S. Wilder, Hinsdale, N. H., manufacturer of Merrill's Chisels and Drawing Knives, has established a warehouse in this city at No. 98 Chambers street, and appointed C. E. Jennings & Co. selling agents.

J. Clark Wilson & Co., No. 81 Beekman street, inform us that they have effected a compromise with all their creditors; and with the view of closing out their stock of Hardware as speedily as possible, they are prepared to offer special inducements to cash buyers. F. F. Tennis will, until further notice, conduct their former commission business in his own name at their old stand. Among the agencies represented by him are the Snell Mfg. Co., Wilson Mfg. Co., Nashua Lock Co., Fisher & Norris, Clark & Co., Newcomb Bros., Turner & Cowlishaw, and others.

E. S. Wheeler & Co., New Haven; Conn., managers and chief owners of the New Haven Rolling-Mill Company, have purchased the extensive Wire Works of Atwater & Co., New Haven, now in bankruptcy.

As an indication of the shrinkage on manufacturing investments, we may mention that these works pass into the hands of the present purchasers at less than one-eighth of the amount for which they were mortgaged, two years ago. We invite attention to their advertisement on page 29.

## BRITISH IRON MARKET.

(Specially reported by cable for The Iron Age.)

WEDNESDAY, AUG. 22, 1877.

Scotch Pig.—There is an improvement in the demand, and a large business has been done. Prices are firm, and unchanged.

Manufactured Iron is unchanged.

Rails.—The market is quiet, and prices nominal.

## IRON.

American Pig.—Although the coal troubles in the Lehigh region continue, the supplies needed for the furnaces do not appear to be visibly affected, and makers seem to be more anxious to sell than at any time during the past four or six weeks. The consumptive demand, aside from the requirements of pipe makers, has dwindled down to very small proportions. We hear of sales during the week of 2,000 tons Nos. 2 and 2x Thomas at \$17.25 at tidewater. In addition, several small lots of various brands, aggregating about 600 tons, have changed hands. We quote: Foundry No. 1, \$18 to \$19; Foundry No. 2, \$17 to \$18; Gray Forge, \$16 to \$17.

Scotch Pig.—This branch of the iron business is almost at a standstill. Since our last writing, 200 tons of Carnbroe arrived at this port, half of which was sold on private terms, and balance has gone into store. We quote: Glengarnock, \$25.50 to \$26; Eglington, \$24 to \$24.50 and Coltness, \$27 to \$27.25.

Rails.—The Lackawanna Iron and Steel Co.'s works have remained idle ever since the strike, and we believe the Joliet mills are also shut down, leaving but nine Steel Rail mills in operation. No transactions in Steel Rails are reported during the week, although there is some inquiry, and we hear of pending negotiations which are likely to result in business. Two hundred tons of Iron Rails sold at a price equal to \$36 at tidewater. We quote at unchanged figures: Iron, \$33 @ \$38; and Steel, \$45 @ \$47, both at mill.

Old Rails.—In the absence of business we repeat our quotation of \$19, which is the nominal price.

Scrap.—We quote Wrought, from yard, \$23 @ \$24 for No. 1.

Manufactured Iron.—Continues dull at unchanged prices.

The failure of George M. Wheeler, iron dealer, No. 54 Cliff street, is announced. Liabilities, \$250,000, one-third of which is due to the banks and \$80,000 to firms in England. The largest creditors are the following: Canwell & Co., Sheffield, England, \$45,000; Hurd, Dawson & Hardy, Yorkshire, England, \$34,562; assignee of F. S. Comstock & Co., \$30,000; Winslow, Lanier & Co., \$20,000; Union National Bank of Pittsburgh, \$20,000; Merchants' and Manufacturers' National Bank of Pittsburgh, \$15,000; Amoskeag National Bank of Manchester, N. H., \$15,000; American Exchange National Bank of New York, \$8,000; Charles Kneeland, \$8,000; S. G. Wheeler, Jr., \$18,104. Register Little has received his voluntary petition in bankruptcy.

## METALS.

Copper.—The market has quieted down again since our last, sales being limited to 200,000 pounds Lake Superior, on the spot, at 18½c. @ 18½c., and 100,000 pounds September-October delivery at 18½c. Baltimore continues nominal. In England Best Selected has given way 2½, and Chili Bars have declined 10½, the quotation per cable now being \$75 for the former and \$68, 10½ for the latter. Mail advices have been received from London to the 11th instant, and from them we extract the following

passage: "The demand for manufactured and Yellow Metal for India is slow, but further orders could be had if smelters were disposed to reduce their price about ¼d. per pound; this, however, to the present time they have declined to do, as the price of the raw material does not enable them to sell manufactured at a profit below current quotations, but it is questionable whether they will be able to sell any large quantity without making some concession. Smelters are ready to show every inducement to consumers to buy, and are offering exceptionally easy terms of payment in certain quarters, but the home trade is so excessively quiet that few are disposed to avail themselves of such offers at present. The market closes tolerably steady, but the want of Indian orders is seriously felt, and this is, perhaps, the weakest part of the market." As regards manufactured no change has occurred in either Copper or Yellow Metal, and previous prices may be repeated; we quote new Sheathing 25c., and Bolts and Braziers, 30c.; Yellow Metal Sheathing, 20c.; Yellow Metal Bolts, 25c.; and Nails 20c. net cash.

Tin.—Our market is unaltered. Straits may be quoted 15½c. @ 15½c.; gold; English Refined, 15½c. @ 15½c.; ditto Common, 15c., and Banca 17½c., all gold, large lots. About 500 slabs Straits have been sold during the week at 15½c., gold. Fresh shipments this way from Singapore this month are reported by cable to be about 90 tons. The Chocorua arrived from there at Boston this week with about 2300 slabs, which for the present have to be stored. London cables £65 for Straits, and Singapore \$19.25 per picul, the latter too high for our market. Tin Plates.—Accounts by mail are to hand from England to the 11th instant, reading as follows: "A fair business is doing for some markets, but the demand is not general. For America the shipments are satisfactory, but for the Mediterranean orders are scarce. Makers are rather stiffer in their quotations, but buyers are indisposed to advance in their limits. The demand has not so much improved as to justify higher prices, and as the price of Tin is decidedly lower, and Iron is certainly no dearer than before, makers should be content to book orders without standing out for increased prices. Nothing should be done to check the demand in any way." The market here is quiet and steady, there being no pressure to sell. We quote, gold, per box, ordinary brands, large lines, as follows: Charcoal Bright, \$6.62½; ditto Turned, \$6.12½; Coke Tin, \$5.75 @ \$5.80; and ditto Turned, \$5.50 @ \$5.62½.

Lead.—Sales for the week sum up 250 tons Common Domestic at 5c., currency, at which figure some additional 300 tons may probably still be had, but for large lots there is no demand just at present. Western advices also continue dull; there is, indeed, very little doing, co. rollers having no courage to take hold of Lead, despite the extremely low prices. At St. Louis the best brands are inactive at 4½c., currency; freight this way, 40c. No later cable reports have been received from London, and the inference is that no further change has taken place. "Our market has been very quiet, and the tendency seems to be slightly in favor of buyers. The imports of foreign Lead for the first seven months in 1877 amounted to 58,039 tons, against 45,691 tons in 1876, and 45,411 tons in 1875, and the exports of Lead for the same period were 23,235 tons, against 20,061 tons in 1876, and 17,532 tons in 1875." The great excess of importation sufficiently explains the late downward course of values. Manufactured is in moderate request; we quote Bar, 7½ cents; Pipe, 8½; Sheet, 9; and Tin lined Lead Pipe, 16½, all less to per cent. to the trade.

Spelter and Zinc.—Domestic Spelter, although not over active, has become decidedly firmer, and nothing can now be had under 6c., currency, while the better brands command 6½c., currency. Of Foreign, 25 tons W. H. have been procured in Germany by cable at a figure equal



Spelter, 100 lbs.	18.00	@	prton.
Wrought Iron, 100 lbs.	10.00	@	"
Light do., 100 lbs.	9.00	@	"
Store Plate, 100 lbs.	10.00	@	"
Machinery do., 100 lbs.	10.00	@	"
Burned Iron, 100 lbs.	4.00	@	"

The prices current for Rags, &c., are as follows:

Canvass, Linen, 100 lbs.	4.50	@	5 c.
" Cotton, No. 1, 100 lbs.	5.00	@	"
" No. 2, 100 lbs.	4.50	@	"
White, No. 1, 100 lbs.	4.00	@	"
Colored do., 100 lbs.	3.00	@	"
Mixed, Woolen, 100 lbs.	2.00	@	"
Soft do., 100 lbs.	1.50	@	"
Gunny Bagging, 100 lbs.	3.00	@	"
Butte, 100 lbs.	3.00	@	"
Kentucky Bagging, 100 lbs.	3.00	@	"
Book Stock, 100 lbs.	2.00	@	"
Newspaper Stock, 100 lbs.	2.00	@	"
Waste Paper and Scraps, 100 lbs.	1.00	@	"
Kentucky Bale Rope, 100 lbs.	4.00	@	"
Cakum Junk, No. 1, 100 lbs.	4.50	@	5 c.
" No. 2, 100 lbs.	3.00	@	"
Tarred Shaking, 100 lbs.	1.00	@	1 1/2 c.
Grass Rope, 100 lbs.	3.00	@	3 1/2 c.

EXPORTS

Of Hardware, Iron, Machinery, Metals, &c., from the Port of New York, for the Week ending August 21, 1877:

Hamburg.	Quan.	Value.	Pumps, pkgs.	14	\$560
Ag. Imp., pgs.	3	\$850	Sew. mach., cs.	3	500
Hdw., cs.	63	1,566	Clocks, bxs.	20	500
Sew. Mach., cs.	12	351			
Clocks, cs.	118	1,618			
Mach'y, cs.	31	317			
Mach'y, cs.	31	3473			
Pumps, pkgs.	6	400			
Pistols, cs.	1	300			
Copper, cs.	438	5,250			
Gl'sw're, pgs.	3	125			
Windmills, cs.	39	1,006			
Metals, bxs.	7	300			
Bremen.					
Lea. belt, cs.	1	451			
Pumps, bxs.	5	400			
Ag. Imp., pgs.	36	910			
Hdw., cs.	58	1,587			
Windmills, cs.	64	1,600			
Antwerp.					
Pit'd ware, cs.	4	350			
Car springs, cs.	1	130			
Rotterdam.					
Copper, bxs.	81	9,122			
Mf. Iron, pgs.	6	348			
Ag. Imp., pgs.	13	575			
Hdw., cs.	20	535			
Scales, cs.	5	600			
Glasgow.					
Spring, bxs.	2	125			
Hdw., cs.	2	109			
Lea. belt, bxs.	7	1,386			
Clocks, bxs.	265	3,769			
Mach'y, pgs.	2	89			
Wire, bbls.	10	350			
Sew. mach., cs.	115	2,210			
Needles, cs.	2	3,980			
Liverpool.					
Clocks, bxs.	204	3,011			
Hdw., cs.	174	7,120			
Wire g'ds, cs.	6	70			
Cig'm T'ls, cs.	1	102			
Metals, cs.	1	200			
Cig'm T'ls, cs.	41	806			
Lea. belt, cs.	2	361			
Guns, cs.	1	100			
Pit'd ware, cs.	1	100			
Wringers, bxs.	18	500			
Old iron, pgs.	307	430			
Ag. Imp., pgs.	25	668			
Mf. of Iron, cs.	8	25			
Mach'y, cs.	15	1,052			
Sew. mach., cs.	34	1,480			
P'g'ds, pgs.	32	1,000			
Pistols, cs.	2	72			
London.					
Gl'sw're, cs.	50	1,340			
Pistols, cs.	1	272			
Hdw., cs.	180	4,800			
Ag. Imp., pgs.	190	7,961			
Pumps, cs.	6	145			
Clocks, cs.	14	467			
Files, cs.	1	125			
Mach'y, cs.	7	1,564			
Windmills, cs.	5	325			
Grind'ng, cs.	16	450			
Mfg. of Iron, pgs.	5	146			
Spelter, slabs, 7,571	23,700				
Sew. mach., cs.	193	12,220			
British North American Colonies.					
Mf. Iron, pgs.	20	150			
British West Indies.					
Coal, tons.	128	553			
Hdw., cs.	63	1,310			
Mf. Iron, pgs.	10	347			
Nails, kegs.	136	417			
Lamps, pgs.	9	78			
Ag. Imp., pgs.	4	71			
Tinware, cs.	4	80			
New Zealand.					
Cig'm T'ls, pgs.	304	5,858			
Mach'y, cs.	9	1,594			
Stores, cs.	90	275			
Hdw., cs.	205	4,007			
Ag. Imp., pgs.	505	26,568			
Mf. Iron, pgs.	24	150			

IMPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending Aug. 21, 1877:

Hardware.					
Bloomfield J. C. & Co.					
Revolvers, cs.	1				
Baw & Dotter,					
Cases, 4					
Baker Hermann & Co.					
Mdse, pkgs.	2				
Packages, 4					
Carey Samuel,					
Grindstones, cs.	30				
Drexel, Morgan & Co.					
Cutlery, cs.	1				
Friedmann & Lauter-					
Jung,					
Mdse, pkgs.	5				
Hale J. M. bags,	175				
Awls, cs.	1				
Harrison Bros. & How-					
son,					
Cutlery, cs.	1				
Hildick A. H.					
Chains, cs.	10				
Casks, 2					
Moore's J. P. Sons,					
Guns, cs.	1				
Merchants' Dispatch Co.					
Packages, 3					
McClay & Co.					
Cases, 10					
Earthenware, pkgs.	2				
Peters Bros.					
Steelware, pkgs.	6				
Revolving & Daily,					
Mdse, pkgs.	2				
Swates & de Planque,					
Cases, 2					
Van Nieu A. R. & Co.					
Packages, 3					
Wiesbusch & Huffer Hdw.					
Co.					
Cutlery, Hdw. and					
Perc. caps, pkgs.	59				
Woodruff A. S. & Co.					
Packages, 43					
Wetlar M.					
Ironware, cs.	19				
Order,					
Packages, 304					
Anvils, 55					
Grindstones, 56					

COAL.

During the past year the enormous producing capacity of the Anthracite Coal companies and railroads engaged in mining, with the limited consumption of the country, produced the natural result of breaking down prices and forcing many of the companies into bankruptcy. In the struggle to retain custom, make a large tonnage and keep up the price of stocks, the price of Coal was forced down to a point which, in many cases, was considerably below the actual cost of mining and production. During the greater part of the summer the price obtained for Coal in the New York markets has been barely large enough to cover the cost of mining, transportation and selling, leaving nothing for interest on capital, repairs, sinking fund and the like. To use a common expression in the trade, the prices did not enable the operator to get "a new dollar for an old one." The opinion generally prevailed in the trade that there was an actual loss, estimated at from 40 to 60 cents per ton, upon most of the Coal sold. Wages were reduced, the strictest economy practiced in all operations connected with mining, and the cost of production reduced to a minimum, and even then the more favorably located mines were the only ones that were reported able to live. Those which were operated at a loss merely chose the least of two evils, it being cheaper to go on than to remain idle, on account of the heavy expenses of pumping, &c., which must continue in any event.

As no combination among the companies for the reduction of the output was possible, there seemed to be no alternative but bankruptcy in the immediate future.

The spread of the labor strikes into the coal regions, by which operations in some of the regions have been entirely suspended; the trouble upon the coal roads, by which some of them were obliged to stop transportation, and the more recent labor troubles at various shipping points have seriously diminished the tonnage reaching tide water. There was naturally a reaction, prices became firm and then advanced steadily, buyers becoming frightened in some cases, and in others hoping to put in stocks before any considerable rise took place. Several causes have operated to prevent a large advance in the price. The amount of Coal in stock in all parts of the country was large at the time the strike began; the tonnage for the year was considerably in excess of last year. It also happens that one of the largest companies, the Philadelphia and Reading, is at work, and is anxious to put as large a tonnage as possible on the market. The company is usually accounted able to supply the market at this season of the year, when the demand is comparatively light. Although coal is somewhat scarce there is no real dearth. The quantity of Coal in the country is so large that it would probably be many weeks before a complete stoppage of the mines would be seriously felt.

There is a good deal of inquiry for Coal, and prices are firm and steadily advancing. There are no quotations, however, each one getting as large a price as possible. Yesterday afternoon we heard \$3.50 quoted for Lehigh; the quotation would hardly stand for a day, however. If a consumer really needs Coal he will have no difficulty in obtaining it in small lots. There are a good many companies or individual miners that have Coal. Many of them in reply to questions answer, "we have a little," "we have a few sizes," and so on. When asked for quotations the answer is, "we will quote what we have, future delivery being very uncertain." At present the men are holding out determinedly, and there seems little prospect that the companies will yield, since the present prices will not justify an advance in the rate of wages. The action of the Philadelphia and Reading Company, in stocking every possible market within reach with all the Coal it could take, will doubtless prevent the rise in price from being as rapid as was to be expected. The public are not in humor to submit to an advance with a good grace; hence we may expect the adjustment of wages and prices will take time.

In regard to the future course of the market very little can be said. In the trade the opinion very generally prevails that the price cannot fall below the present figures again this year. This seems plausible, since, if the labor difficulty was at once settled, the production could hardly be brought up to its maximum until the stimulus of the fall trade is felt, and this would naturally continue into the winter.

PHILADELPHIA.

Office of The Iron Age, 220 South Fourth St., PHILADELPHIA, August 21, 1877.

The general condition of business seems to brighten a little, and although the depression for the time being is very severe, the future is regarded with much confidence. The continued favorable reports from the West and South give the strongest assurance that an improvement in general business will be experienced soon. In this immediate locality there are some indications of improvement already. Shipbuilding and repairs keep up fairly, and may again be considered a permanent industry. John Roach & Son of Chester have three large ships on the stocks, and have three more to go on immediately, and have just completed and delivered one steamer, the Western Texas, to the Mallory Company of New York. They are employing 1300 men, and have work enough on hand to insure employment for the balance of the year. The Chester Rolling Mill Company are full of orders, and running to their greatest capacity. At the Steam Engine and Machine Shops of Robert Wetherill & Co. we get a similar report; six Corliss engines under way, besides a variety of other machinery, and about 120 hands at work. At the Edge Moor Iron Works they are employing about 400 hands, running double turn, and have a large amount of orders on hand. In Wilmington general trade is still dull, but on the whole considerably better than at this time last year. Car building has been quite active, but at the moment is less so than in the early part of the season, although further orders are anticipated shortly. Some of the machine shops are quite busy, and there is also a fair business doing in

shipbuilding, repairs, &c. The leather trade, an important interest in Wilmington, is said to be quite active, and the indications all through seem tending toward improvement. In Philadelphia the indications of improvement are rather feeble, but it is believed that the worst is past. The Baldwin Locomotive Works are doing fairly, employing about 1,200 hands. There appears to be a steady demand for locomotives and street motors, and the outlook in this line is quite encouraging. Orders for 18 locomotives have been received within the past few days, and a fair trade during fall and winter seems pretty well assured. We do not hear of much doing at the large machine shops, but as the season advances it is expected a gradual improvement will be developed, which will extend by degrees until it becomes general.

**Pig Iron.**—The market continues in the same unsettled and feverish condition noted for several weeks past. There was a slight movement during the early part of last week, owing to purchases made by pipe foundries, but it has not been supported by a demand from other quarters, and for the present business appears to have relapsed into its former dullness and depression. Dullness at this season is not unusual, and while a larger business is confidently anticipated in the near future, there is an uncertainty and weakness which is far from encouraging. The labor question and the fuel question are serious matters to the producer, and the chances appear to be somewhat in favor of an advance, slight it may be, but it's the last straw, &c. In regard to Pig Iron it is not at all certain that an advance in cost will be counterbalanced by a similar advance in price; that can be settled only by the law of supply and demand. At the present time there is nothing very encouraging to be seen; the wants of the trade are easily supplied, and to impart a firm tone to the market there must be a larger consumption than there has been for some time past. The condition of the trade is so exceedingly sensitive, however, that the effect of a few days' steady sales would be felt immediately, while a few days of inactivity also show a good many weak spots. With the present ratio of demand prices certainly cannot advance, but with the increase usual at this season there is no reason to think that there can be any decline. Stocks in consumers' hands are light, but if there should be an unexpectedly large demand it is not likely that prices would be materially advanced, as there are plenty of furnaces ready to blow in just as soon as there appears to be any chance of finding a market for their product. In the meantime it is hoped and expected that the usual fall trade will develop a demand sufficient to prevent any accumulation of stock, and thus keep prices steady at about present rates. There is already a wide range in asking prices, according to brand, quantity required and terms of payment. Some special brands used for foundry purposes bring \$19.50 to \$20; others with less reputation sell in a small way at \$19, while large lots could be brought down to \$18. The demand is still confined to small lots at prices above noted, and although cash buyers for round lots for prompt delivery are anxiously sought after, there is not much disposition to sell largely for future delivery. Buyers, however, do not show any anxiety in regard to the future, and will not anticipate their wants unless some very strong inducements are offered. Among the sales recently made we note one of 400 tons and one of 500 tons, both special brands of No. 1 Foundry, and one 500 tons of Lehigh No. 1, all at quotations as above designated. There have also been sales of several 500-ton lots of Forge Irons, all at about \$16, Philadelphia delivery. The market closes quiet and unsettled at about the following rates, say: No. 1 Foundry, \$18 to \$19; No. 2 Foundry, \$17 to \$17.50; Gray Forge, \$16 to \$16.50, with special brands held at \$1 to \$1.50 per ton more.

**Blooms.**—There is a fair demand at about the following quotations: Sunken Scrap Blooms (246 lbs.), \$42 to \$45; Northern Ore Blooms (2240 lbs.), \$38 to \$40; best quality Charcoal Billets (2240 lbs.), for wire and steel purposes, \$52.50 to \$55; Bars, do., \$65 to \$67.50; Sheet Iron Blooms, cornered (246 lbs.), \$62 to \$65; Cold-blast Charcoal Plate Blooms, \$55 to \$57.50; run out Anthracite, \$50 to \$52.50.

**Plate and Tank Iron.**—Business for the time being is somewhat irregular, some of the mills being full of orders and others doing very little. We understand, however, that there are inquiries which seem to indicate an early renewal of the demand for large quantities of Ship Plates. An offer of 2 1/2% was made and refused for a lot of 500 tons a day or two ago, and we are informed on the best authority that another order for a much larger quantity will be on the market in a few days. There is a moderate demand from the general trade for small lots, and with the exception that prices are low and unremunerative, there are reasonably fair prospects in regard to this branch of business. We continue late quotations as follows: Ship Plates, 2 3/4% to 2.50%; Tank Iron, 2 1/2% to 2 3/4%; Shell Iron, 3c; Flange Iron, 4c to 4 1/2%; and Best Bloom, 5c to 5 1/2%.

**Sheet Iron.**—There is a continued improvement in the demand for Sheet Iron, and the outlook is considered to be favorable for a good fall trade. Stocks are light, and whatever demand there may be will have a good effect at the mills, as there are no stocks to fall back upon. We hear the little doubt in regard to prices, but there is little doubt, if the mills can be kept fully employed, they will find a margin for profit somewhere. Prices are steady and unchanged. We quote: Refined Sheet Iron, No. 26 to 28, 3 1/2%; No. 22 to 24, 3 1/2%; No. 16 to 21, 3 1/2%; Best Bloom Sheets, No. 26 to 28, 5 1/2%; No. 22 to 24, 5 1/2%; No. 16 to 21, 5c; Common Red Plates, 5-16 to 18, 2 1/2% to 2.37 1/2%; Refined Plates or Blue Annealed, 5-16 to 18, 2 1/2%; American R. G., 5-16 to 18, 3 1/2%; Best Bloom, 5-16 to 18, 5c; Philadelphia Russia, 9c; Bloom Galvanized, list, 45 cent; Refined Galvanized, list, 55 cent.

**Bars.**—There is no change from last week, and we might safely repeat our remarks in last report. There is not the slightest improvement in prices. This condition of affairs cannot be expected to continue much longer, and with better prospects in other departments, we may reasonably expect the Bar trade will come in for its share before long. In the meantime, the dullness and depression seems to be uniform, and business almost at a stand, regardless of price. We quote: Common Iron, 1.65c. to 1.75c, and Best Refined, 2c. to 2.1c.

**Muck Bars.**—No sales of importance to note; prices nominally \$33 to \$34, Philadelphia delivery.

**Steel Rails.**—We cannot report any improvement whatever; the demand is light, and chiefly for lots of a few hundred tons each. Under these circumstances, prices are necessarily weak, although quotations are nominally unchanged. It is well understood, however, that if business could be secured by such a course, buyers for cash and prompt delivery would obtain liberal concessions. In the absence of actual transactions, we continue our last week's quotations—say \$45 to \$46, cash, at mills, with sales of small lots at inside figure.

**Iron Rails.**—There have been more sales than usual the past week, but chiefly for small lots. There is also an inquiry for a lot of several thousand tons, but it is not unlikely that the low price of steel rails may induce them to substitute steel for iron rails. Sales during the week include 1000 tons for Cuba, and 500 tons, delivery at Perth Amboy, price in both cases understood to be \$37 at tide; other smaller lots have been placed at similar rates. We quote \$33 to \$35, at mills, according to terms and quality.

**Old Rails.**—The market is dull and prices nominally unchanged. Sales are reported at \$19 and one lot at a shade lower price, but as the market is pretty well cleared, prices are steady. There is no special inquiry however, and it would be difficult to effect sales at any important advance. We quote the market steady at \$19 to \$19.50, according to quality and terms.

**Scrap Iron.**—There is a little better demand for selected qualities, and for such prices are steady and firm. We note sales 100 tons Wrought at outside figure, and smaller lots at lower prices, according to quality. We quote Wrought \$22 to \$23; cast, \$14.50 to \$16.00.

**Old Car Wheels and Axles.**—We do not hear of any recent sales, and prices are nominally unchanged, say \$18 to \$19 for wheels, and \$28 to \$30 for axles.

**Nails.**—The trade seems to be in better shape, and the recent arrangement of the Atlantic Nail Association has secured a more uniform scale of quotations. Stocks are said to be less than 225,000 kegs, and as there is a steady and increasing demand, the condition of the trade seems to be materially improved. We quote \$2.50, with 10c. reduction to buyers of large lots.

**Lead.**—There is no special change to note. Domestic is nominal at 5c. to 5.25c., according to quantity. Refined is offered at about 5.37 1/2c. and Foreign at 6.37 1/2c. to 6.50c. gold. Manufactured is in good demand, and sale is very active, with a more than usually large trade doing. We quote: Bar, 6 1/2%; Pipe, 8 1/2%; and Sheet, 9c.; Shot, Drop, 8 1/2c. to 9 1/2c.; Buck, 9 1/2c. to 10 1/2c., all less 10 per cent. to the trade.

PITTSBURGH.

Office of The Iron Age, 77 Fourth Avenue, PITTSBURGH, Aug. 21, 1877.

**Pig Iron.**—There has been no improvement in the demand for this important article, and business instead of improving as expected is growing worse and worse. At this season of the year there is usually a very fair degree of activity, many consumers anticipating future wants, but the market is more depressed now than it has been at any time since the panic. Some of the mills, in consequence of the Coal strikes, labor troubles and unremunerative prices for the products, are indifferent about starting up, and those running are gauging their production by their orders, and, consequently, are not working up to anything like their full capacity. It is not expected by consumers that Pig Iron will go much if any lower, but they do not appear to fear an advance, hence they are refusing to buy except as their immediate actual wants necessitate, and the increased consumption of Old Rails makes the quantity of wanted Pig still less than it would be. There was but a single sale of Mill Iron reported last week, and it was only 20 tons. While the production and visible supply, not only here but at all the points tributary to this market, are down lower than they have been at any time since the panic, the supply is in excess of present wants, and commission men, realizing the situation, are not making much effort to sell, and consumers are refusing to buy except when forced to do so. Prices unchanged. Bituminous Coal Smeled, No. 1 Foundry, \$22.50 to \$23, 4 months; No. 2 do., \$21 to \$22; Gray Forge, \$20 to \$21, the latter figure for best brands of Red-shot.

**Manufactured Iron.**—Some of our manufacturers begin to talk a little more hopefully of the future; and that business is improving somewhat is evident from the fact that some additional mills have been started up within the past day or two, but the great source of complaint, unremunerative prices, still exists. While nearly all those mills having a reputation for turning out good stock are refusing to meet competition by using old rails and poor brands of pig iron, thereby reducing the cost of production at the expense of quality, buyers have no difficulty in obtaining all they want at bottom prices. We hear of sales as low as 1.60c. and even 1.50c. for Bars, but established brands are held firmly at 1.80c. for round lots and 1.90c. to 2c. in a jobbing way. The Association of Hoop Iron Manufacturers, formed some time ago independent of the regular association, it is reported, have gone to pieces, and if so the hoop makers are again untrammelled, and it is probable they will go for the



or 10 per cent. discount. Antimony is quiet at 11 1/2c. to 12 1/2c., gold, for Boston spot lots, and Spelter is easy, closing at \$6 on the spot for 10-ton lots. Tin continues weak. A large amount is on the way, which tends to depress prices. We quote: Straits, 15 1/2c. to 15 3/4c.; Banca, 18c. to 19 1/4c.; Refined English, 15c. to 15 1/2c., gold. We quote Plates: Charcoal, I. C., \$7 to \$7.25; Coke, \$6 to \$6.25, and Terne at \$6.50 to \$7, gold.—Commercial Bulletin

CINCINNATI.

Messrs. L. R. HULL & Co., under date of Aug. 18, write us as follows: Pig Iron.—The agricultural works have been entering orders for a supply of Foundry Iron and causing considerable activity in certain grades. Outside of this demand the market is generally quiet and prices are unchanged.

HOT-BLAST FOUNDRY.

Hanging Rock No. 1	Charcoal	23.00 @ 24.00	4 mos.
Hanging Rock No. 2	Charcoal	22.00 @ 23.00	4 mos.
Hanging Rock No. 3	Charcoal	21.00 @ 22.00	4 mos.
Hanging Rock No. 4	Charcoal	20.00 @ 21.00	4 mos.
Hanging Rock No. 5	Charcoal	19.00 @ 20.00	4 mos.
Hanging Rock No. 6	Charcoal	18.00 @ 19.00	4 mos.
Hanging Rock No. 7	Charcoal	17.00 @ 18.00	4 mos.
Hanging Rock No. 8	Charcoal	16.00 @ 17.00	4 mos.
Hanging Rock No. 9	Charcoal	15.00 @ 16.00	4 mos.
Hanging Rock No. 10	Charcoal	14.00 @ 15.00	4 mos.

FORGE IRONS.

Hanging Rock No. 1	Charcoal	23.00 @ 24.00	4 mos.
Hanging Rock No. 2	Charcoal	22.00 @ 23.00	4 mos.
Hanging Rock No. 3	Charcoal	21.00 @ 22.00	4 mos.
Hanging Rock No. 4	Charcoal	20.00 @ 21.00	4 mos.
Hanging Rock No. 5	Charcoal	19.00 @ 20.00	4 mos.
Hanging Rock No. 6	Charcoal	18.00 @ 19.00	4 mos.
Hanging Rock No. 7	Charcoal	17.00 @ 18.00	4 mos.
Hanging Rock No. 8	Charcoal	16.00 @ 17.00	4 mos.
Hanging Rock No. 9	Charcoal	15.00 @ 16.00	4 mos.
Hanging Rock No. 10	Charcoal	14.00 @ 15.00	4 mos.

CAR WHEELS AND MALLEABLE.

Lake Superior	8.50 @ 8.75	cash.
Virginia Hematite (Washed)	4.25 @ 4.50	cash.

LOUISVILLE.

Messrs. GEO. H. HULL & Co., under date of Aug. 20, write us as follows: Market increasing in activity, but no improvement in prices. Prospects for an improved fall trade good. The usual time, 4 months, is allowed on the quotations below:

FOUNDRY IRONS.

No. 1 Hanging Rock, Charcoal	23.00 @ 24.00	4 mos.
No. 2 Hanging Rock, Charcoal	22.00 @ 23.00	4 mos.
No. 3 Hanging Rock, Charcoal	21.00 @ 22.00	4 mos.
No. 4 Hanging Rock, Charcoal	20.00 @ 21.00	4 mos.
No. 5 Hanging Rock, Charcoal	19.00 @ 20.00	4 mos.
No. 6 Hanging Rock, Charcoal	18.00 @ 19.00	4 mos.
No. 7 Hanging Rock, Charcoal	17.00 @ 18.00	4 mos.
No. 8 Hanging Rock, Charcoal	16.00 @ 17.00	4 mos.
No. 9 Hanging Rock, Charcoal	15.00 @ 16.00	4 mos.
No. 10 Hanging Rock, Charcoal	14.00 @ 15.00	4 mos.

W. B. BELKNAP & Co., Iron Merchants,

Louisville, Ky., under date of Aug. 18, report a marked increase during the past week in the volume of orders for Merchant Iron, and especially for Wagon Hardware, Horse Shoes and Nails. The season is opening earlier than usual. Southern merchants, as a rule, are in excellent spirits, and are buying more freely than since the panic. The railroads—notably the Louisville, Nashville and Great Southern and its connections—report an augmentation of both passenger and freight traffic far exceeding expectations. Prices of iron and its manufactures, however, continue low, in sympathy with the depression prevailing in other sections.

ST. LOUIS.

Special report by Messrs. SPOONER & COLLINS, Iron Commission Merchants, 217 North Third street, St. Louis, under date of Aug. 16: We note no change in the condition of our market since last report, though there is an increased demand, and we look for a good trade soon. We quote same as last:

	No. 1.	No. 2.	Mill.	White and Mottled
Missouri Stone Coal	\$23.00	\$22.00	\$21.50	\$22.00
Missouri Charcoal	23.00	22.00	21.50	22.00
Tennessee Charcoal	22.50	21.00	20.50	21.00
Southern Coke, very soft and strong	24.00	23.00	22.00	23.00
Hanging Rock Charcoal	25.00	24.00	23.00	24.00
H. R. Charcoal, Cold-short	24.00	23.00	22.00	23.00
Extra	No. 1.	No. 2.	No. 1.	No. 2.
Hanging Rock Coke	25.00	24.00	23.00	24.00
West Virginia, Coke	24.00	23.00	22.00	23.00
COLD-BLAST CHARCOAL—All Numbers.				
Hanging Rock	\$25.00 @ 26.00	4 mos.		
Tennessee	25.00 @ 26.00	4 mos.		
Missouri	25.00 @ 26.00	4 mos.		
Georgia	25.00 @ 26.00	4 mos.		
Alabama	25.00 @ 26.00	4 mos.		
Assorted Bar Iron	25.00 @ 26.00	4 mos.		
No. 1 Railroad	1.00 per hundred			
Machinery Scrap	.80 @ .85			
Heavy Cast	.65 @ .70			
Light Cast	.55 @ .60			
Old Rails	19.00 @ 20.00	4 mos.		
Old Car Wheels	17.00 @ 18.00	4 mos.		

CHATTANOOGA.

Special report by S. B. Lowe, Dealer in Metals, under date of Aug. 20: Although metals have not been active and sales only moderate, yet inquiries have been frequent and prices steady. The Bar mills are behind their orders, and the demand for Nails more than the ability of the works to supply. Quotations for metals are about as follows:

No. 1 Foundry, extra	\$20.00 @ 21.00	4 mos.
No. 2 Foundry	19.00 @ 20.00	4 mos.
No. 3 Foundry	18.00 @ 19.00	4 mos.
Gray Forge	15.00 @ 16.00	4 mos.
White and Mottled	14.00 @ 15.00	4 mos.
Coke		
No. 1 Foundry, extra	\$21.50 @ 22.50	4 mos.
No. 2 Foundry	20.50 @ 21.50	4 mos.
No. 3 Foundry	19.50 @ 20.50	4 mos.
Gray Forge	16.50 @ 17.50	4 mos.
White and Mottled	15.50 @ 16.50	4 mos.
COLD-BLAST CHARCOAL		
Car Wheel Metal	\$22.50 @ 23.50	4 mos.
Forge Metal	24.50 @ 25.50	4 mos.

Muck Bar	29.00 @ 30.00	4 mos.
Old Car Wheels	17.00 @ 18.00	4 mos.
Old Rails per ton	16.00 @ 17.00	4 mos.
Brown Hematite Ore 50 to 56 per cent.	1.75 @ 1.85	4 mos.
Red Fossiliferous Ore, 50 to 56 per cent. per ton	1.50 @ 1.75	4 mos.

RICHMOND.

Mr. ASA SNYDER, Iron Merchant and Furnace Agent, Richmond, Va., writes as follows under date of Aug. 20: The Pig Iron market continues dull. A better feeling, however, prevails in anticipation of a good fall trade. Quotations remain unchanged.

Va. Cold-blast Charcoal, Cold-short	\$21.00 @ 22.00	4 mos.
No. 1 X	20.00 @ 21.00	4 mos.
No. 2 X	19.00 @ 20.00	4 mos.
No. 3 X	18.00 @ 19.00	4 mos.
No. 4 X	17.00 @ 18.00	4 mos.
No. 5 X	16.00 @ 17.00	4 mos.
No. 6 X	15.00 @ 16.00	4 mos.
No. 7 X	14.00 @ 15.00	4 mos.
No. 8 X	13.00 @ 14.00	4 mos.
No. 9 X	12.00 @ 13.00	4 mos.
No. 10 X	11.00 @ 12.00	4 mos.

BALTIMORE.

Messrs. WYETH & BROTHER, Iron and Steel Merchants, 46 and 48 South Charles street, report us the following prices, under date of Aug. 20: There was a noticeable improvement in trade circles during the past week, and a decidedly more cheerful feeling pervading the market. We quote the same quiet and improving, at unaltered values.

AMERICAN REFINED BAR IRONS.

Round and Square, ordinary sizes from 1/4 to 2 inclusive	1.15 to 2.00	
Hoop Iron, 1 1/2 wide and upward	3 to 3 1/2	
Band Iron, from 1 1/2 to 4 in. wide	3 1/2 to 3	
Horseshoe Iron 3/4 to 1 wide by 3/8	3 1/2 to 3	
thick	3 1/2 to 3	
Norway Nail Rods	5 1/2 to 6	
Black Diamond Cast Steel, Flats, Squares and Octagons, ordinary sizes	1 1/2 to 1 3/4	
Cast Spring Steel	8 to 9	
Homogeneous Steel Plate	8 1/2 to 9	
Perkins' Horseshoes, per keg of 100 lbs.	\$4.00 1/2	
Machinery Steel	8 to 9	
R. R. Spikes	2 1/2 to 2 3/4	
Common Horse Nails, from 1 1/2 to 1 3/4 per pound	10 to 12	
Putnam Horse Nails	10 to 12	
Globe Horse Nails	10 to 12	

Messrs. R. C. HOFFMAN & Co., Iron and Commission Merchants, No. 23 South Frederick street, report the Pig Iron market as follows, under date of Aug. 20: The Iron market continues without change, dull and depressed, with but little doing. We quote prices as follows:

Baltimore Charcoal	\$20.00 @ 21.00	4 mos.
Virginia	19.00 @ 20.00	4 mos.
Anthracite No. 1	18.00 @ 19.00	4 mos.
No. 2	17.00 @ 18.00	4 mos.
No. 3	16.00 @ 17.00	4 mos.
White and Mottled	15.00 @ 16.00	4 mos.

FOREIGN.

FRANCE.

(Monteur des Interests Matérielles.)

PARIS, Aug. 5, 1877.—Metals.—Business has not been very active, but still tolerably steady. People have become reconciled somewhat to the abnormal condition of public affairs till the next elections, and trouble themselves about it as little as possible. Copper.—The visible supply in England and France is still large, being close upon 40,000 tons; this includes a stock at Havre of 370 tons, against 250 a year ago. In view of these statistics and the large cargoes on the West Coast during the first half of July, we quote, deliverable at Havre: Chili Bars, 187 francs the 100 kilos; Common ditto, 182; Ingots and Slabs, 190; Best Selected English, 192, 50 and pure Corroco Ore, 187. Havre is unaltered and prices are nominal. Marseilles is sustained with some difficulty and remains inanimate. They quote Red Tokat, 190 francs; Small Refined Ingots, 175 to 180; Sheet Zinc, 21; Bolts, 22, and Yellow Metal Sheathing, 210. Tin.—The statistics of the 1st inst. are to hand, and show a London stock of 600 tons, against 745 a year ago, the aggregate visible supply in England and France being 12,350 tons, against 12,891 in 1876; the July deliveries have been but 1410 tons, against 1635 in June. What precedes, it must be confessed, is by no means reassuring, and in response thereto the metal has resumed its drooping attitude. We have been inactive here and quote nominally, Banca, 190 francs the 100 kilos; Billiton, 187; Straits, 182, 50, and English and Australian, 180. Leading holders of the metal have realized some lots of Straits on the spot at 180 less 2 1/2 per cent. discount. They quote Banca there, 190; Billiton, 185, and English Refined, 190. The dullness in the European Lead markets has become intense, stocks being low, and a general trade in this metal inactive, while there is no demand for war purposes just at present. At Paris, French, Belgian and German are still bringing 51, 52 francs the 100 kilos, and the market is 50, 50. Marseilles remains quiescent at the following quotations: First Fusion, 48, 75 to 49; Second, 48; Pipe and Sheet, 55, and Shot, 54. Spelter participates in the general listlessness and the market is reported no favorable change from here, our range remaining 50 to 50, 50 francs the 100 kilos. Marseilles continues to tend downward; they quote Sheet Zinc, 67 to 68 francs the 100 kilos, according to brand, less 1 per cent. and Old Remelted slabs, 44. Iron.—Its position in France may be put down as being a good one. If, on the one hand, in the Champagne district trade is not very active, on the spot at Paris, in the Ardennes and the Sambré Cast, there is every reason to be contented. The general price of Merchant Iron is 175 to 180 francs, and where this figure has not yet been reached in these localities it seems near being so. In the Ardennes prices are firm and the rolling mills actively engaged. The demand for "Affinage" Pig Iron is also good. In the Haute Marne the foundry owners have their hands full of orders for summer orders. The Paris and Lyons Railroad Company has given large orders for iron columns. Sheet Iron has been in request, and so have been the better classes of Special Iron: the very best kinds are, however, neglected. Up to September there are many orders yet to be filled in most portions of France, but by that time fresh orders for the winter campaign should be dropping in. There has been no suspension of work yet anywhere. In Lorraine three new blast furnaces will soon be blown in. We quote good quality "Affinage" Pig Iron, 63 francs, and "Mouillage" No. 3, 80 francs; at these prices it is considered a fair value. Stocks are quite ample, and the market is quiet and weak. In the Loire districts matters have been slightly looking up without leading to any improvement in price thus far.

BRITISH CENTENNIAL COMMISSION.

Extracts from the Report of Col. Sanford.

(Continued.)

WATER TRANSPORTATION.

"The exhibits of vessels and apparatus of transportation were not large," says Col. F. H. Rich, R. E., who makes a report on this classification, some of the most important, however, being the following, which he describes:

The dredging machines of the American Dredging Company are spoken of as simple, cheap and well adapted to the work for which they are designed. The paper boats so well remembered by Exhibition visitors are referred to.

Col. Rich, R. E., of the Board of Trade, notices the novelties in paper boats exhibited by Messrs. Waters & Sons, of Troy: "They are made of coarse paper, put together with shellac, are very strong in proportion to their weight, and are likely to be useful for shooting punts, traveling canoes and racing gigs. These boats are very easily repaired. The paper of which they are made is of two sorts. One kind is made of Manila grass and the other from Russia duck. It is rolled in sheets 80 inches wide and of any length required."

The rowing apparatus of Mr. Lyman, of Hamburg, N. Y., by which the rower faces the bow, is favorably mentioned. The other exhibits are classified as follows:

Class 554—Steam Launches.—Major Malory, of Bridgeport, Conn., exhibited a screw steam yacht, in which the screw not only propelled the vessel, but also acted as a rudder. The screw can be moved to either side in a half circle, as the screw shaft is pivoted near the stern. The yacht was afloat in the Delaware River. It could be turned round (the whole circle) by means of the screw in a little more than its own length in 1 minute and 45 seconds. This invention may probably be usefully applied to dockyard launches and for intricate river navigation, as the screw forms a most powerful and effective rudder. The length of the yacht is 95 feet

GERMANY.

(Borrenshalle.)

HAMBURG, Aug. 4, 1877.—Metals.—The week has been a generally quiet one, nor do we expect a resumption of more actual business in metals till the ensuing months, when everybody will be back on the opening of the fall trade. Late events in the East seem to indicate that the war will become a prolonged one, and German commerce, in

its dealings with Russia and the remaining belligerents, will have to prepare for it, which interests the metal trade as much as any other, since we do a good business with Northern Russia, where there will be an increased demand for certain metals for a long time to come, though less active at this precise moment. Copper prospects in Central and Western Europe continue all we can wish for, and the outlook is a rather improved one so far as the purchasing capacity of our farming population is concerned. Copper has been dragging along slowly, but has, nevertheless, been sustained, especially at Berlin, where Mansfield has remained 78 to 80 marks the 50 kilos, on the spot, and 77 to arrive. We remain unaltered here as follows: Drontheim, 80 marks; Minnesota, 100; Quincy, 82; and English Tough Cake, 75 to 76 marks. Tin is so unfavorably situated from a statistical point of view that dealers in Germany hesitate to purchase beyond immediate requirements, especially at Berlin, where Berlin continues quoting Banca 77, 50 to 79, and English 76 to 78 marks the 50 kilos. We remain unaltered here: Banca 75 to 76 and English 75 to 78. Lead.—We are under the influence here of a sufficient supply, and a very slowly recovering activity in the general trade demand for this metal. Hamburg remains unchanged as follows: English Pig, 22, 50 to 23 marks the 50 kilos; Sheet, 23 to 23, 50; German Pig, 22, 50 to 23, and Spanish 25. Berlin is steady; Tarnowitz at the works, 20, 25; on the spot, 21, 50 to 22, 50; Spanish, 25, 50 to 26, 50. Spelter.—Although the quiet state of affairs lately prevailing continues, prices are not yet tolerably well upheld; no further giving way seems to be apprehended in the immediate future. Berlin is steady at 21 to 21, 50 for W. H., and 20 to 21 marks common brands are unchanged here at 20 marks to arrive; 20 spot Spelter is to be had. At Breslau W. H. fluctuates between 19, 50 and 19, 80, while the common brands range between 18 and 19 marks the 50 kilos.

HOLLAND.

(Koch & Vloerboom.)

ROTTERDAM, Aug. 7, 1877.—Tin.—The special government statistics of export have just been published, from which we extract the following tables:

REPORT OF TIN FROM HOLLAND.

To	1877.	1876.	1875.
Germany	109	278	488
England	21	9	0
Belgium	173	115	115
France	48	27	30
Hamburg	12	19	40
United States	—	—	—
Other countries	73	31	136
Total	478	472	919
To	1877.	1876.	1875.
Germany	1253	1314	1719
England	10	10	281
Belgium	781	673	674
France	310	303	184
Hamburg	159	160	184
United States	—	—	—
Other countries	133	50	287
Total	2865	2399	3397

The price obtained at the late sale of Banca No. 1, which was sold at 11 guineas, 10 shillings and 4 pence, averaging 11, 05. Since then the market has become quite dull, and Banca to be delivered about 12 shillings and 6 pence, and Banca to be delivered at 11, 25, and at 11, 25, from the coming September sale. Billiton, spot and futures, sold at 39, 75 to 39, 25.

AUSTRALIA.

(Mining News.)

ADELAIDE, June 19, 1877.—Copper.—Burra Burra: During the last four weeks Morphet's engine shaft has been sunk about 11 feet, now 8 fathoms below the 85. The ground has eased very much, and it is expected that rapid progress will be made to the 100-fathom level. The 85 South is still producing saving work for the Adelaide (York Peninsula) shaft. In the 45, east of Hall's shaft, the lode has held its own, 4 tons of 30 per cent. ore per fathom, until the 31st instant, when, on taking it down, the lode was found to have diminished in size. The falling off is regarded as of a very temporary nature, the more so as the spot is surrounded with ore on all sides. The price of Copper is certainly very depressed, and yet this is the proper time to develop the mines, so as to have reserves of ore to break and sell when a higher price is obtainable. The ore, averaging as it does, about 12 per cent. will now sell at a difference of about 12 per cent. on gross returns.

CHINA.

(Arnold, Karberg & Co.)

CANTON, July 13, 1877.—Copper.—The market is quiet at a standstill for the present. Arrivals have been unprecedentedly heavy, and prospective receipts being still of a very extensive nature, it has become a matter of impossibility almost to obtain quotations for the supplies of the most reliable quotations can be given. Cardiff Coal is being offered freely for arrival, but the ample supplies that are now available have rendered buyers extremely cautious, and they seem dubious as to the safety of operating at even a low price of \$6 per ton. For a cargo Liverpool Coal ex Johanna, no higher offer than \$6, 75 per ton has so far been received. Business in Australian Coal has been confined to the sale of 600 tons ex E. M. Young, at \$6, 75 per ton deliverable at Amoy, which is equal to about \$8, 25 at Hong Kong. The market closes extremely dull for all descriptions, and nothing short of an entire cessation of supplies for some time to come is likely to restore a healthy tone.

OUR ENGLISH LETTER.

[See page 18.]

BRITISH CENTENNIAL COMMISSION.

Extracts from the Report of Col. Sanford.

(Continued.)

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over all, and the length of keel is 84 feet.

The ice boat or ice yacht exhibited by Mr. Irving Grimmell, of New Hamburg, N. Y., is deserving of commendation. It is rigged like a cutter, runs on three skates, and is reported to attain a speed of about 60 miles an hour when running with a favorable side wind. This very speedy mode of traveling over the ice must be attended with considerable risk.

Class 597—Steam Steering Apparatus.—The exhibits in this class which appeared to be most worthy of notice are: The steam steering apparatus by Mr. Sicles; the capstans, windlasses and chain stoppers exhibited by Messrs. Coffin & Woodward, of Boston, which are simple and effective; the windlass of the American Ship Windlass Company, of Providence, in which a tongue, actuated by a cam, is substituted for the ordinary pawl and rack; the chain cable of Messrs. Frodi, of France, which is made without any welds, and the workmanship and material in the chain cables of Messrs. Bradle & Co., of Philadelphia, appeared to be excellent.

Class 287—Ropes and Cordage.—The exhibits of ropes and cordage are very numerous and very good. Great excellence is apparent in the exhibits of Messrs. Sewell & Day, of Boston, Mass., and the other American manufacturers of these articles.

The judges in this group were, besides Col. Rich, H. C. Goodspeed, Salt Lake City, Utah; J. W. Griffith, Portsmouth, N. H.; and Isaac Newton, New York.

HYDRAULIC APPARATUS.

Motors, transmitters, hydraulic apparatus, &c., forms the subject of a lengthy and interesting report by W. H. Barlow, F. R. S., who was associated during his stay here with the following judges of the group: Mr. Horatio Allen, South Orange, "Homewood," N. J.; president, M. Emil Brugsch, Egypt, secretary, Mr. C. T. Porter, Newark, N. J.; Mr. Jos. Belknap, New York; Mr. James Moore, Philadelphia; Mr. Charles E. Emery, 7 Warren street, New York; Mr. W. H. Barlow, C. E., F. R. S., London; Professor Francis Reuleaux, Germany; M. Nicholas Petroff, Russia.

The form of turbine most numerous exhibited was that patented by M. Lefel, of James Lefel & Co., Springfield, Ohio, the chief new departure being that patented by Messrs. Harris & Co., St. John, New Brunswick. Mr. Barlow adds: There were few departures from the generally known forms of these engines; that furnished by Messrs. Harris & Co., St. John, New Brunswick, being an exception, and, I believe, untried as regards its advantages.



# L. COES' Genuine Improved Patent SCREW WRENCHES.

Manufactured by

**L. COES & CO.,**  
Worcester, Mass.



We invite the particular attention of the trade to our New Straight Bar Wrench, *altered*, full size of the larger part of the so called "reinforced or jog bar." Also our enlarged jaw, made with ribs on the inside, having a full bearing on the front of bar (see sectional view), making the jaw fully equal to any strain the bar may be subjected to.

These recent improvements in combination with the nut inside the ferrule firmly screwed up flush, against square, solid bearings (that cannot be forced out of place by use), verifies our claim that we are manufacturing the strongest Wrench in the market.

We would also call attention to the fact, that in 1869 we made several important improvements (secured by patents), on the old wrench previously manufactured by L. & A. G. Coes which were at once closely imitated and sold as the *Genuine Wrench* by certain parties who seem to rely upon our improvements to keep up their reputation as manufacturers, and although the fact of their imitating our goods may be good evidence that we manufacture a superior Wrench, we wish the trade may not be deceived on the question of originality. Trusting the trade will fully appreciate our recent efforts, both in improvements on the Wrench and in the adoption of a Trade Mark, we would caution them against imitations. None genuine unless stamped

"L. COES & CO."

Warehouse, 97 Chambers St., & 81 Reade Sts., N. Y.  
HORACE DURRIE & CO., Sole Agents.



**JOB T. PUGH'S**  
Celebrated AUGERS and BITS.

WARRANTED SUPERIOR TO ANY OTHER MAKE.  
They are made entirely by hand, and are especially adapted to hard wood. Supplied to the trade only. Gas Fitters', Millwrights', and Carpenters' Augers and Bits. Machine Bits of all descriptions made at short notice.  
Office and Works,  
Rear of Nos. 3112, 3114, 3116, 3118 & 3120 Market Street, Philadelphia, Pa.

**THE CONNECTICUT VALLEY MFG. CO.,**  
CENTERBROOK, CONN., Manufacturers of  
Lewis' Patent Single Twist Spur Bits,



GERMAN GIMLET BITS, etc.

Send for our illustrated price list and discounts.

**GEER'S AIR CUSHION DOOR SPRING**  
Will shut any door, light or heavy,  
WITHOUT SLAMMING.

Twenty-four times as much force exerted when the door is closed than at the wide open point.



Circulars sent on application.

Manufactured by

**The Cowles Hardware Co.,**  
UNIONVILLE, CT.

## KIMBALL'S PATENT.

"SOLID CAST STEEL."

## SHOVELS AND SPADES.

Are used with entire satisfaction by some of the leading

Railroad and Mining Companies

in this country, and largely exported to

AUSTRALIA, SOUTH AMERICA, WEST INDIES and other Countries.

The Blades are forged from **Best Quality Solid Cast Steel** and riveted to **Malleable Iron Straps**, which extend entirely across the blade, thus equalizing the strain. They have a **Concave Back**, which **strengthens** the Shovel and facilitates its use in digging or spading, and will wear longer than any other Shovel.

We claim they are the

**Strongest and Most Durable Shovels Made,**

which claim is sustained by the large increase of our sales.

For Sale by all Hardware Dealers.

MANUFACTURED BY

**KIMBALL SHOVEL CO.,**

Baltimore, Md.



## LESTER SAW.

This Machine is the result of combining all the qualities which the best practical experience thus far has been able to name as the requisites of a perfect Amateur Tool. While it is as cheap as the cheapest, it certainly is as good as the best. It consists of a Scroll Saw with tilting table for inlaid work, and patent clamps into which a saw can be inserted in the dark. A Turning Lathe, with a complete set of best steel turning tools, Emery Wheel with wide and narrow rim, Boring Attachment with six stubs, Steel Drills which will drill wood or iron, and a Circular Saw for cutting straight edges. Every part is well built and will do good work. A box is attached to each machine for holding the small tools. When shipped it is taken down and packed in a small compass. It is only the work of a few moments to put it up again in working order. Price, complete, \$8.00. Without the Lathes, \$6.00.

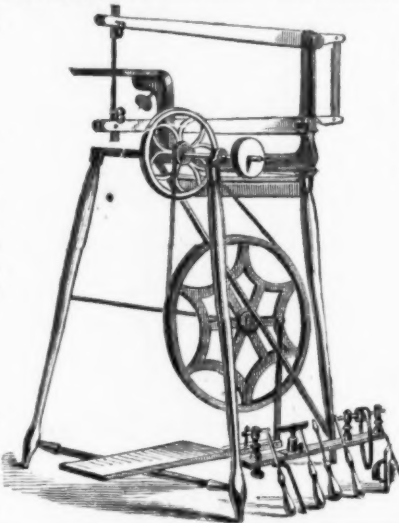
### DESCRIPTION OF THE SEVERAL PARTS.

#### THE SCROLL SAW.

Length of arms.....20 1/2 in.  
Length of sweep for work.....17 "  
Height of table above floor.....31 "  
Diameter of table.....6 "  
Length of stroke.....1 1/2 "  
Diameter of driving wheel.....12 "  
Diameter of balance wheel.....6 1/2 "  
Diameter of emery wheel.....3 1/2 "  
Number of strokes of saw per minute.....1,000  
Number of revolutions of emery wheel per minute.....1,000  
These speeds are made with a tread of 150 per minute.  
Weight of Scroll Saw, 30 lbs.

#### THE LATHE.

Weight.....6 1/4 lbs.  
Length of ways over all.....15 1/4 in.  
Distance between centers.....9 "  
Swing.....3 "  
Length of slide rest.....4 1/2 "  
Height of head and tail stocks above ways.....2 1/2 "  
Diameter of cone pulley.....1 1/4 "  
Number of revolutions per minute.....7,000



#### THE CIRCULAR SAW.

Diameter of saw.....2 1/2 in.  
Length of saw arbor.....2 1/4 "  
Height from floor to table.....33 "  
Size of table.....45 1/4 "  
Number of revolutions per minute.....7,000  
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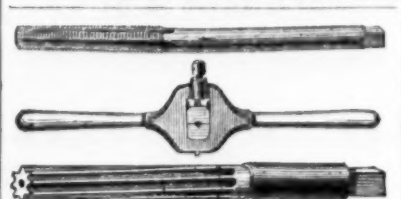
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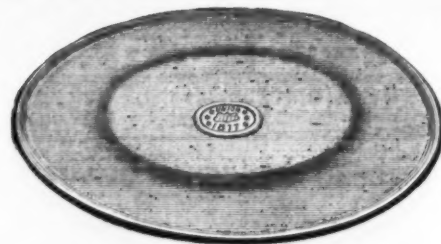
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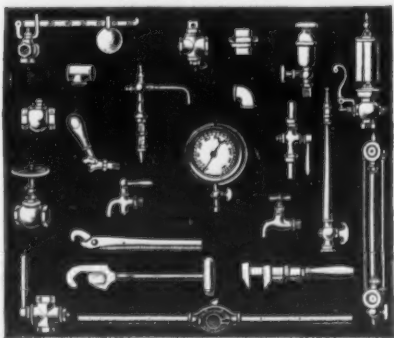
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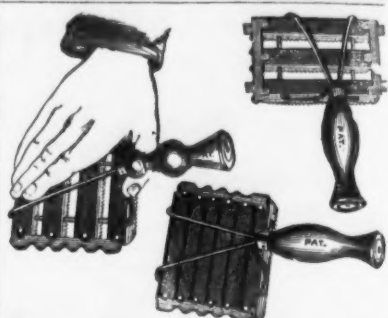
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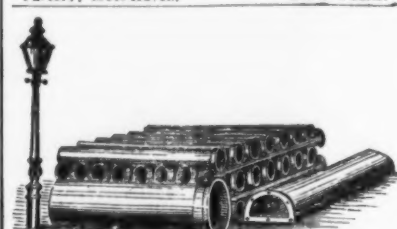
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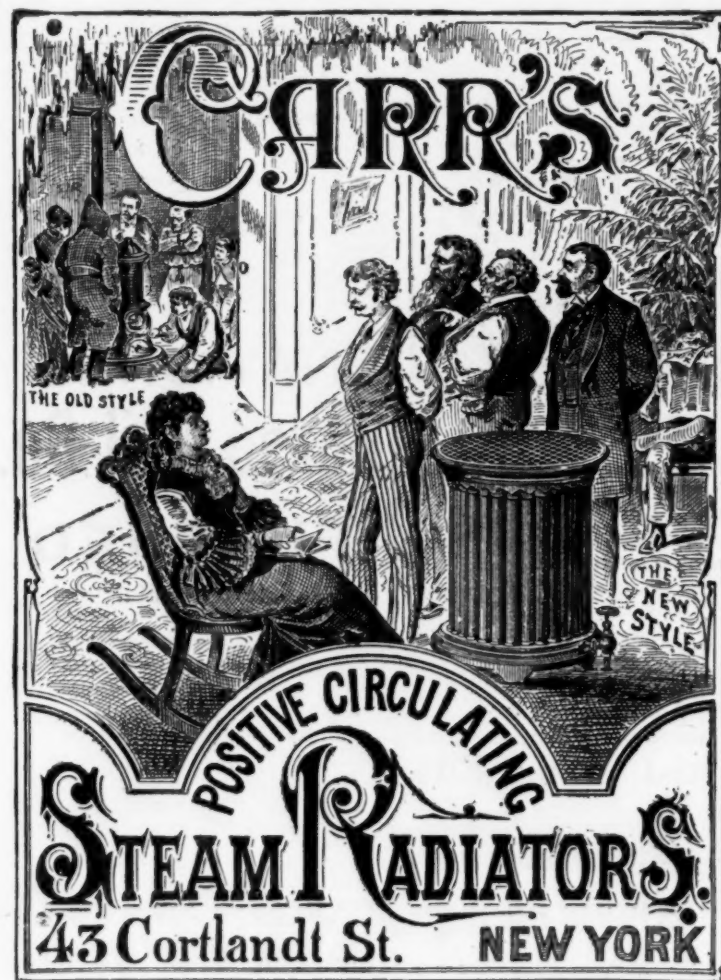
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Shepard Sidney & Co., Buffalo, N. Y., ..... 4  
Thompson & Co., 101 Beekman, N. Y., ..... 4  
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Baker Hermann & Co., 101 Duane, N. Y., ..... 4  
King, Black & Co., 80 Chambers, N. Y., ..... 4  
Lewy & Sons, 103 Washington, N. Y., ..... 4  
Harrid F. W., 75 Chambers, N. Y., ..... 4  
Windmiller Lons & Roelker, 30 Reade, N. Y., ..... 4  
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Blake Bros. Hardware Co., New Haven, Conn., ..... 4  
Clark & Co., Buffalo, N. Y., ..... 4  
Crosby & Co., Boston, Mass., ..... 4  
Cowles Hardware Co., Unionville, Ct., ..... 4  
Enterprise Mfg. Co., Phila., ..... 4  
Foster & Co., 103 Washington, N. Y., ..... 4  
Paro Geo., Buffalo, N. Y., ..... 4  
Peck O. Webster, 110 Chamber, N. Y., ..... 4  
Peters & Green, 110 Chamber, N. Y., ..... 4  
Platt & Co., Buffalo, N. Y., ..... 4  
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Reynolds & Green, 110 Chamber, N. Y., ..... 4  
Union Mfg. Co., 99 Chambers, N. Y., ..... 4  
Van Wagner & Williams 83 Beekman, N. Y., ..... 4  
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Perin & Gaff Mfg. Co., Cincinnati, O., ..... 4  
Semple & Birge Mfg. Co., St. Louis, Mo., ..... 4  
Spencer & Underhill, 91 Chambers, N. Y., ..... 4  
**Hinges**  
Lewis, Oliver & Phillips, Pittsburgh, Pa., ..... 4  
**Housing Engines, Makers of**  
Hazard & Mfg. Co., 200 E. 11th, N. Y., ..... 4  
Mundy J. S., Newark, N. J., ..... 4  
**Horse Nails, Makers of**  
Amable Horse Nail Co., 25 Chambers, N. Y., ..... 4  
Jobert & Co., Boston, Mass., ..... 4  
National Horse Nail Co., Vergennes, Vt. .... 4  
Northwestern Horse Nail Co., Chicago, Ill., ..... 4  
Putnam S. & Co., Putnam, N. Y., ..... 4  
Putnam S. & Co., Neponset, Mass., ..... 4  
The Fowler Nail Co., Seymour, Conn., ..... 4  
**Horse Shells, Makers of**  
Phillips Mills, 17 Batterymarch, Boston, ..... 4  
Burden Iron Works, Troy, N. Y., ..... 4  
Rhode Island Horse Shell Co., Providence, R. I., ..... 4  
Horse Shell Co. of Pa., Pittsburgh, Pa., ..... 4  
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Hazard & Mfg. Co., 40 Grand, N. Y., ..... 4  
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Harford Steam Boiler Inspection and Insurance Co., ..... 4  
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Boynton Geo. A., 30 Wall, N. Y., ..... 4  
Crace U. O., 91 Wall, N. Y., ..... 4  
Hazard & Mfg. Co., Pittsburgh, Pa., ..... 4  
Hazard T. D., 204 Pearl, N. Y., ..... 4  
**Iron (Castings)**  
Brown & Sons, S. Guilford, Conn., ..... 4  
**Iron, Charcoal, Warm or Cold Blast**  
Quincy John W., 28 William, N. Y., ..... 4  
**Iron, Castings, Makers of**  
Adams Hugh W., 56 Pine, N. Y., ..... 4  
Brown T. Horace, 205 E. 11th, Phila., ..... 4  
Greene & Curtis, Memphis, Tenn., ..... 4  
Sponser & Collier, St. Louis, Mo., ..... 4  
**Iron, Pig, Importers of**  
William Jackson & Co., 69 Wall, N. Y., ..... 4  
**Iron Pliers**  
Abel Brothers, 190 South, N. Y., ..... 4  
Borden & Bondorf & Co., Youngstown, Pa., ..... 4  
Borden & Lovell, 61 and 71 West, N. Y., ..... 4  
Conney Daniel F., 103 Washington, N. Y., ..... 4  
Hazard & Mfg. Co., 200 E. 11th, N. Y., ..... 4  
Fuller, Lord & Bond, 128 Greenwich, N. Y., ..... 4  
Harrison & Gilfillan, 325 to 326 Water, N. Y., ..... 4  
Jacobson & Co., 103 Washington, N. Y., ..... 4  
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Wallace Wm. H. & Co., Albany and Washington, ..... 4  
Greels, N. Y., ..... 4  
Hazard & Mfg. Co., 200 E. 11th, N. Y., ..... 4  
Williamson James & Co., 59 Wall, N. Y., ..... 4  
Whitney A. B. & Bro., 58 Hudson, N. Y., ..... 4  
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Burden Iron Works, Troy, N. Y., ..... 4  
Cleveland Rolling Mill Co., Cleveland, O., ..... 4  
Hazard & Mfg. Co., 200 E. 11th, N. Y., ..... 4  
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Phenix Iron Co., 410 Walnut, Phila., ..... 4  
Prosser Thos. & Sons, 15 Gold, N. Y., ..... 4  
Rowland Wm. & Harvey, Phila., ..... 4  
Snoenberger & Co., Pittsburgh, Pa., ..... 4  
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Zug & Co., Pittsburgh, Pa., ..... 4  
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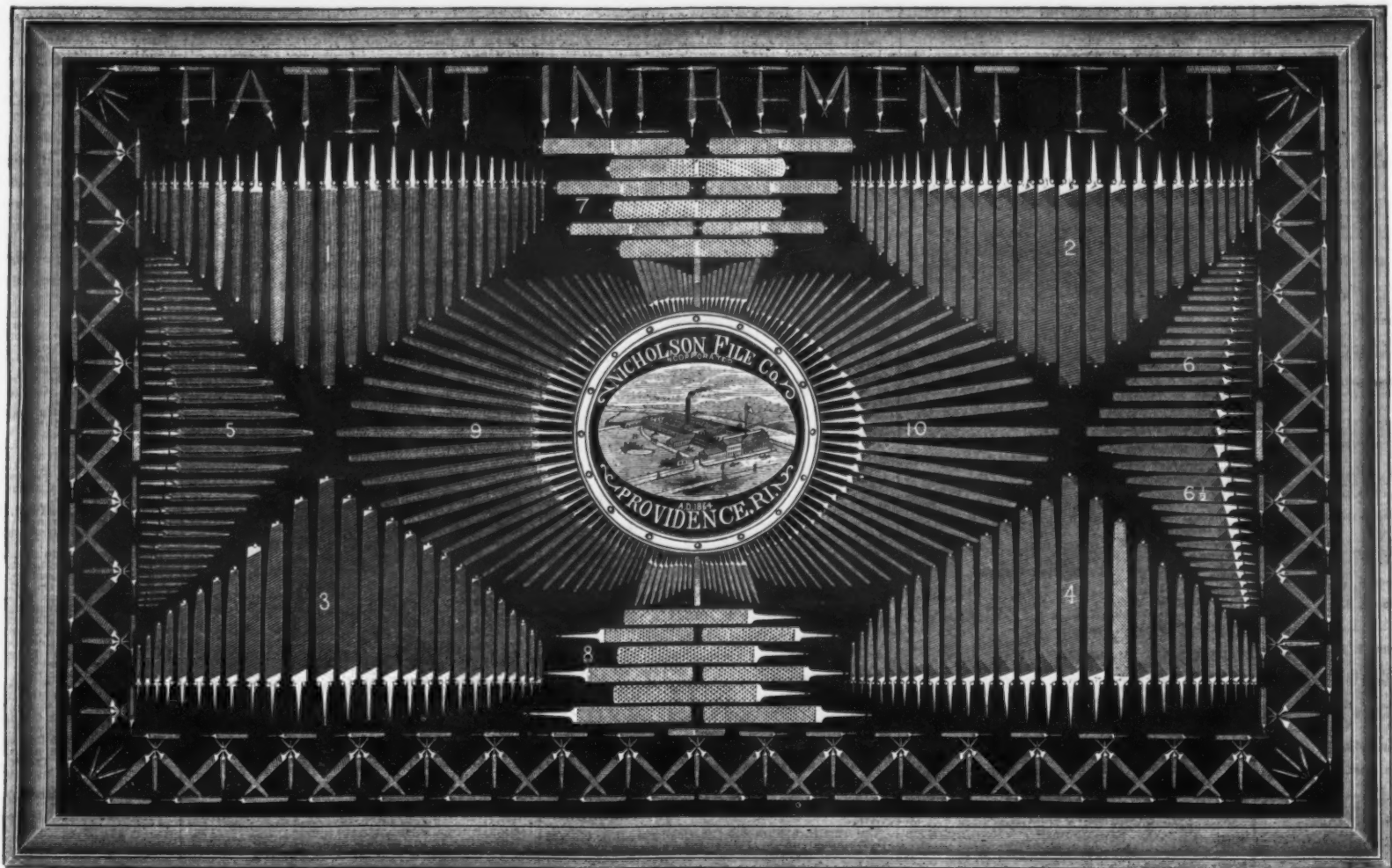
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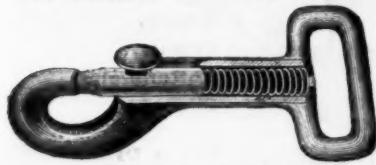
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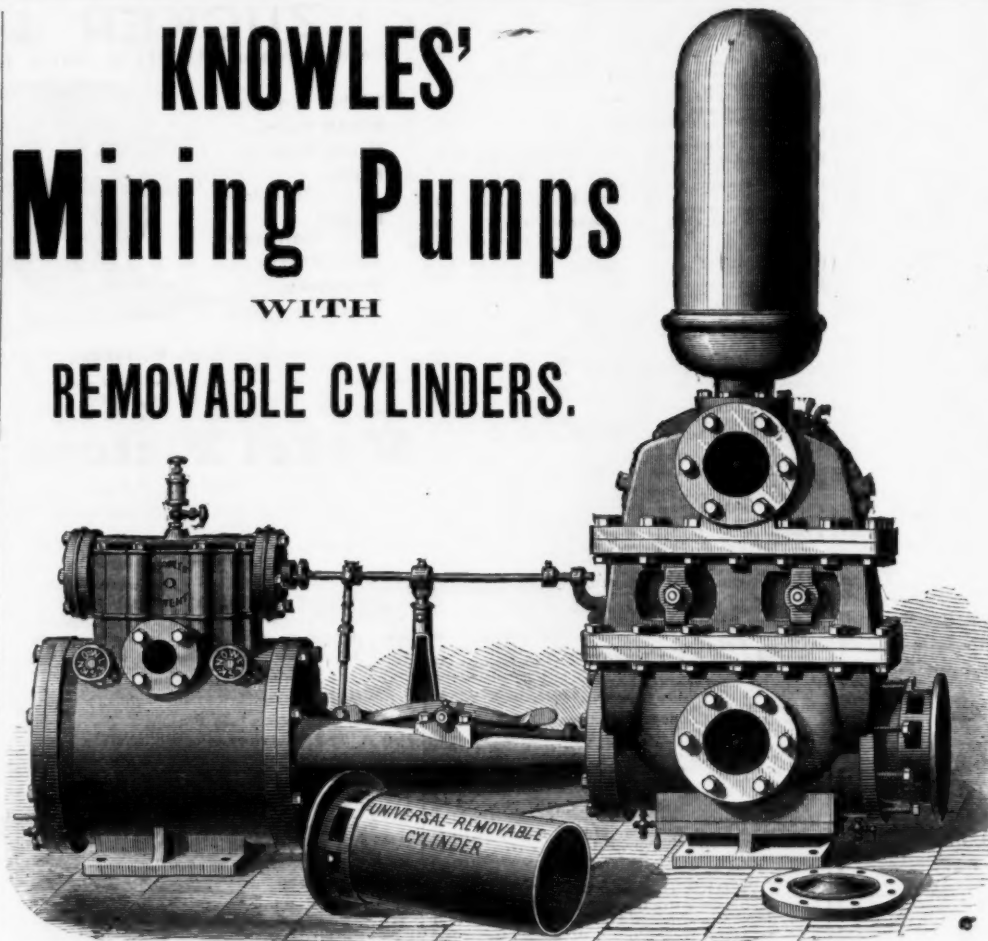
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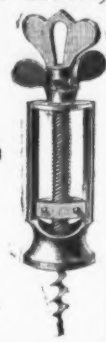
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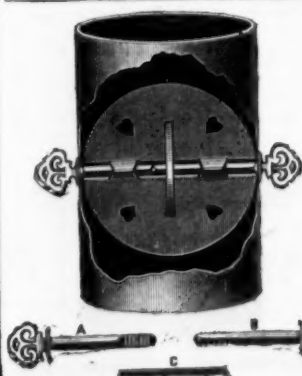
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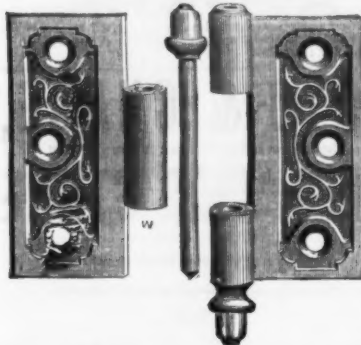
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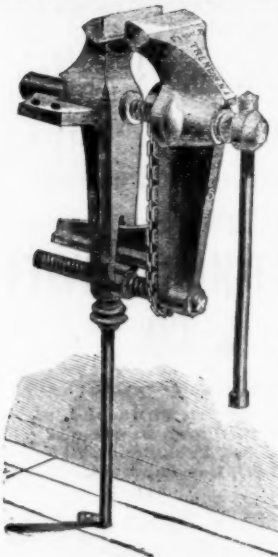
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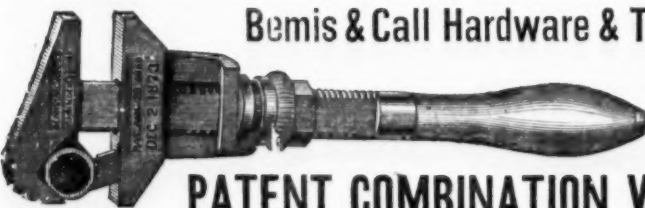
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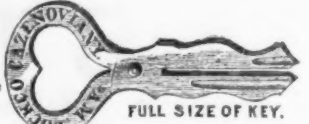
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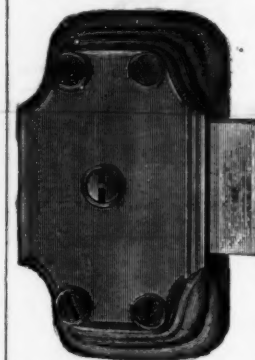
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**STERLING METAL KEYS**

That will not corrode or wear, and are stronger than steel.



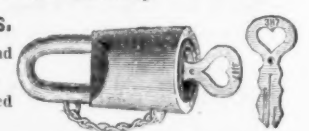
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CHEESE  
KNIVES.  
—  
&c., &c., &c.

**Enterprise Mfg. Co.**

Make the  
Only Irons Filled with  
Non-Conducting  
FIRE CEMENT.  
Send for circular and price list.



**MRS. POTTS'**  
Cold Handle Smooth-  
ing and Polishing  
Irons  
Are made by  
**Enterprise Mfg. Co.,**  
PHILADELPHIA,  
And sold by  
The Hardware Trade.

**V. G. HUNDLEY,  
Proprietor of  
North Carolina Handle Co.,**Manufacturer of  
**HANDLES AND SPOKES.**

Handles for export a specialty.

79 Reade and 97 Chambers Street New York



**PHILADELPHIA.**

(Corrected weekly by Lloyd, Supple & Walton).

Terms, 30 days. For 60 or 90 days, interest added at 10 per cent. per annum.

**Anvils.**  
Peter Wright's, 8 in. gold, 11 @ 10 1/2  
Winchman's, 9 cents per lb. - 10 1/2  
Eagle, 11 1/2  
**Apple Parers.** - Domestic, per doz. 6 50  
Peach Parer, 10 50  
Bay State Parer, Corer and Slicer, 12 50  
Other makers, 7 50  
Lots of 5 to 25 dozen special price.

**Axes.**  
Mann's (according to weight), Per doz. 10 00 @ 9 00  
Red Indian, 10 50 @ 9 50  
Red Chief, 11 00 @ 10 00  
Hunt's, 12 50 @ 11 50

**Augers and Auger Bits.**  
Benjamin Pierce, 1/2 in. 35 @ 47 1/2  
Douglas & Iron's, 1/2 in. 45 @ 50  
Connecticut Valley Auger Bit, 1/2 in. 50 @ 50 1/2  
Cook's Bit, 1/2 in. 50 @ 50 1/2  
Jennings' Bit, 1/2 in. 50 @ 50 1/2  
Bates' Bit, 1/2 in. 50 @ 50 1/2  
Douglas & Iron's, 1/2 in. 50 @ 50 1/2  
Watson Ship Auger, 1/2 in. 50 @ 50 1/2  
Bonney's Pat. Hollow Auger, 1/2 in. 50 @ 50 1/2  
Stearns' Patent Hollow Auger, 1/2 in. 50 @ 50 1/2

**Balances.**  
Light or "Common", 10 @ 25 1/2  
All other Scales, 10 @ 25 1/2  
**Bells.** - Bevin Bros. Mfg. Co. Light Hand Bells, 10 @ 25 1/2  
Hand, Common, 10 @ 25 1/2  
Bells, 10 @ 25 1/2  
Columbia, 10 @ 25 1/2  
Gt. Western & Kentucky Cow, new list, 10 @ 25 1/2

**Boring Machines.** - Bates Mfg. Co., com-  
plete with auger, 10 @ 25 1/2  
Douglas Mfg. Co., complete with auger, 10 @ 25 1/2  
Common Boring Machines, no Augers, 10 @ 25 1/2  
**Bolts.** - Eastern Carriage Bolts, 10 @ 25 1/2  
Western, 10 @ 25 1/2  
Philadelphia, 10 @ 25 1/2  
Columbia, 10 @ 25 1/2  
Wrought Shutter, Stanley, 10 @ 25 1/2

**Braces.** - Barber's, 10 @ 25 1/2  
Backus, 10 @ 25 1/2  
Bartholomew's American, 10 @ 25 1/2  
Spartan, 10 @ 25 1/2  
**Butts.** - East East Joint, Narrow, 10 @ 25 1/2  
Broad, 10 @ 25 1/2  
Cast Loose Joint, 10 @ 25 1/2  
Acorn, Loose Pin, 10 @ 25 1/2  
Acorn, 10 @ 25 1/2  
Meyers and Parliament, 10 @ 25 1/2  
Lull & Porter's (Phila.) Hinges, 10 @ 25 1/2  
Wrought Loose, 10 @ 25 1/2  
Table Hinges and Back Pins, 10 @ 25 1/2  
Narrow, 10 @ 25 1/2  
Loose Joint, 10 @ 25 1/2

**Blind Nuts.**  
Parker, 10 @ 25 1/2  
Buffalo Hardware Co., 10 @ 25 1/2  
Clark, 10 @ 25 1/2  
Shepard, 10 @ 25 1/2  
Garrettson, 10 @ 25 1/2  
**Chains.** - German Hatter and Coll., 10 @ 25 1/2  
Best Proof Oil Chain, 10 @ 25 1/2  
By the case, 500 lbs., 50 @ 25 1/2  
Chain, 50 @ 25 1/2

**Chisels.** - Socket Framing, 10 @ 25 1/2  
Socket Framing, 10 @ 25 1/2  
Tang, 10 @ 25 1/2  
Bates' Framing and Firmer, 10 @ 25 1/2  
**Casters.** - Iron Bed, 10 @ 25 1/2  
Porcelain Wheel Box, 10 @ 25 1/2  
Iron and Brass Wheel Plate, 10 @ 25 1/2  
Porcelain Wheel, 10 @ 25 1/2

**Coffee Mills.** - Common Box and Side, 10 @ 25 1/2  
Patent Box and Side, 10 @ 25 1/2  
**Cutlery.** - American Pocket (best), 10 @ 25 1/2  
Lander, Fray & Clark's, 10 @ 25 1/2  
Goodwin Mfg. Co., Manufacturers' net prices  
**Drawing Knives.** - Hart Mfg. Co., 10 @ 25 1/2  
Adjustable Hand, 10 @ 25 1/2  
Beatty, 10 @ 25 1/2

**Files.**  
Nicholson Mill Files, new list, 10 @ 25 1/2  
Bastard, 10 @ 25 1/2  
Taper, 10 @ 25 1/2  
Butcher's Mill, 10 @ 25 1/2  
Bastard, 10 @ 25 1/2  
Taper, 10 @ 25 1/2

**Fluting Machines.**  
Mire Knox-6 in. roll, 10 @ 25 1/2  
Imperial-4 1/2 in. roll, 10 @ 25 1/2  
6 in. roll, 10 @ 25 1/2  
Crown-4 1/2 in. roll, 10 @ 25 1/2  
8 in. roll, 10 @ 25 1/2  
Eagle-2 1/2 in. roll, 10 @ 25 1/2

**Hammers.**  
Yerkes & Plumb's, new list, 10 @ 25 1/2  
Hammond & Son's, 10 @ 25 1/2  
Veres, 10 @ 25 1/2  
**Hatchets.**  
Beatty's, 10 @ 25 1/2  
Shingling and Half, 10 @ 25 1/2  
Yerkes & Plumb's, 10 @ 25 1/2  
Shingling and Half, 10 @ 25 1/2  
Claw, 10 @ 25 1/2

**Hinges.**  
Strap and T, 10 @ 25 1/2  
**Horse Nails.**  
Nos. 5, 6, 7, 8, 9, 10  
Anasol, Pointed & Polished, 10 @ 25 1/2  
Clinton Horse Nails, 10 @ 25 1/2  
Globe, 10 @ 25 1/2  
Discount on Ausable, Globe and Putnam, 10 @ 25 1/2

**Knobs and Mortises.**  
10 @ 25 1/2  
**Locks and Latches.**  
Door Locks, Latch and Mortise, 10 @ 25 1/2  
Till and Cupboard Locks, 10 @ 25 1/2  
American Padlocks, 10 @ 25 1/2  
Scandinavian Pad Locks, 10 @ 25 1/2

**Lanterns.** - Square Candle and Oil, 10 @ 25 1/2  
Globe for Oil, 10 @ 25 1/2  
Kerosene, 10 @ 25 1/2  
Tubular Lanterns, 10 @ 25 1/2  
**Mattocks.** - Long and Short Cutter, 10 @ 25 1/2  
Western Pattern, 10 @ 25 1/2  
Pennsylvania Pattern, 10 @ 25 1/2

**Measuring Gages.**  
Enterprise Mfg. Co.'s Measuring Faucets, 10 @ 25 1/2  
Rebinder Gages, 10 @ 25 1/2  
Lincoln's, 10 @ 25 1/2  
Lander, Fray & Clark's Petroleum, 10 @ 25 1/2  
Taylor's Petroleum, 10 @ 25 1/2  
Brass Lignor Cocks, 10 @ 25 1/2

**Meat Cutters.** - Dixon's, 10 @ 25 1/2  
Woodruff, 10 @ 25 1/2  
Rowley, 10 @ 25 1/2  
Hale's, 10 @ 25 1/2  
Stuffer, 10 @ 25 1/2  
**Planers.** - Auburn Tool Co., Bench, 10 @ 25 1/2  
Second Quality, 10 @ 25 1/2  
Bailey Iron Planer, 10 @ 25 1/2  
Evans Pat. Circular, 10 @ 25 1/2

**2 1/2 in. Irons.** - American, 10 @ 25 1/2  
Butcher's, 10 @ 25 1/2  
**Plumb and Levels.**  
Adjustable, 10 @ 25 1/2  
Non-Adjustable, 10 @ 25 1/2  
Philadelphia, 10 @ 25 1/2  
Pittsburgh, 10 @ 25 1/2  
**Rules.** - Boxwood, 10 @ 25 1/2  
Ivory, 10 @ 25 1/2  
**Rakes.** - Cast Steel Garden, 10 @ 25 1/2  
Malleable Garden, 10 @ 25 1/2  
Wood Head Iron Teeth, 10 @ 25 1/2

**Shovels and Spades.**  
Howard's Plain Back, 10 @ 25 1/2  
Back Strap, 10 @ 25 1/2  
Extra discount on above for 10 days' cash, 5 %  
Oliver Ames & Sons, new list, 10 @ 25 1/2  
Richmond (pointed face), 10 @ 25 1/2  
Richmond (pointed face), 10 @ 25 1/2  
Stone, Arkansas, 10 @ 25 1/2  
Turkey Oil, No. 1, 10 @ 25 1/2  
Wesley's Extra, 10 @ 25 1/2  
Hindman's 8 in., 10 @ 25 1/2  
United States and others in Combination, 10 @ 25 1/2

**Stocks and Dies.**  
Stove Polish, Gem, 10 @ 25 1/2  
Dixon, 10 @ 25 1/2  
**Try Squares.** - Winterbottom, 10 @ 25 1/2  
Stanley Rule and Level Co., 10 @ 25 1/2  
Willis Thrall, No. 3, 10 @ 25 1/2  
Dixton's No. 2, 10 @ 25 1/2  
**Tacks.** - 1 1/2 in. Weight Tacks, 10 @ 25 1/2  
Frank, Clout and Finishing Nails, 10 @ 25 1/2

**Traps.**  
Genuine Onelida-Newhouse, 10 @ 25 1/2  
Im. Onelida-Newhouse, 10 @ 25 1/2  
Vices, Solid Box, Trenton, 10 @ 25 1/2  
Wrenches, 10 @ 25 1/2  
Crescent Pattern Wrought Bar, 10 @ 25 1/2  
Girard Wrench, 10 @ 25 1/2  
Agricultural Wrench, 10 @ 25 1/2  
Wrought Bar, 10 @ 25 1/2  
Tape Pattern (Wrought Bar), 10 @ 25 1/2  
Philadelphia Tool Co.'s Pat. Dye, 10 @ 25 1/2

**Wire.**  
No. 0 to 18, 10 @ 25 1/2  
No. 19 to 24, 10 @ 25 1/2  
Coppered 0 to 18, 10 @ 25 1/2  
Tinned Iron Wire, 10 @ 25 1/2  
Galvanized Wire No. 1 to 18, 10 @ 25 1/2  
**Wringers.** - Novelty No. 10, 10 @ 25 1/2  
Novelty No. 2, 10 @ 25 1/2  
Universal, 10 @ 25 1/2

**BUFFALO.**

Reported by Messrs. Sidney Shepard & Co.

July 25, 1877.

**Apple Parers.** - Pay State, 10 @ 25 1/2  
Faulstich Turn Table, 10 @ 25 1/2  
Peach Parer, 10 @ 25 1/2  
Potato Parer, 10 @ 25 1/2  
Bells, 10 @ 25 1/2  
Braces, 10 @ 25 1/2  
Brass, 10 @ 25 1/2  
Boards-Stove, Brooks' Pat. 10 @ 25 1/2  
Boards, 10 @ 25 1/2  
Brick-Bath (cost of 2 doz) 10 @ 25 1/2  
Can Openers-Sprague's, 10 @ 25 1/2  
Chisel-Firmer Socket, 10 @ 25 1/2  
Framing Socket, 10 @ 25 1/2  
Corner Socket Chisel, 10 @ 25 1/2  
Slick's Carpenter's, 10 @ 25 1/2  
Castings-Malleable, 10 @ 25 1/2  
Castings-Globe and Ship, 10 @ 25 1/2  
Cutters-Meat, 10 @ 25 1/2  
Egg Beaters-"Dover", 10 @ 25 1/2  
Family, 10 @ 25 1/2  
Knives-Corrugated, 10 @ 25 1/2  
Adjustable, 10 @ 25 1/2  
Columbus, 10 @ 25 1/2  
Files-Malleable, 10 @ 25 1/2  
Fluters-Genera Hand, 10 @ 25 1/2  
Freezers-Ice Cream-"Champion", 10 @ 25 1/2  
Hinges-Gate-Shepard's, 10 @ 25 1/2  
Hinges-Window-Ring, 10 @ 25 1/2  
Henderson's and Standard, 10 @ 25 1/2  
Horn-Coal-Plate, 10 @ 25 1/2  
Funnel, Black and Galvanized, 10 @ 25 1/2  
Fancy and Helmet, 10 @ 25 1/2  
Sad Irons, 10 @ 25 1/2  
Kettles-Brass, 10 @ 25 1/2  
Copper, Hand Made, 10 @ 25 1/2  
Enamel, 10 @ 25 1/2  
Knives-Drawing-Oval No. 1, 10 @ 25 1/2  
Razor Blade, 10 @ 25 1/2  
Lanterns-Tin, 10 @ 25 1/2  
Mugs-Coffee-Box and Side, 10 @ 25 1/2  
Box Union and Eagle, 10 @ 25 1/2  
Cut Nails, 10 @ 25 1/2  
Horse, Ausable, 10 @ 25 1/2

**Paints.** - White Lead, U. S. Gov't, 10 @ 25 1/2  
Paint-Dripping, 10 @ 25 1/2  
Frying, 10 @ 25 1/2  
Pavement-Iron, Black and Tinned, 10 @ 25 1/2  
Screws, 10 @ 25 1/2  
Flat Head Iron, 10 @ 25 1/2  
Flat Head, Brass, 10 @ 25 1/2  
Screws-Wood, Hoop iron, 10 @ 25 1/2  
Tinned, 10 @ 25 1/2  
Sifters-All, 10 @ 25 1/2  
Sifters and Straps-White, 10 @ 25 1/2  
Spoons, Iron Tinned, 10 @ 25 1/2  
S. S. & Co. Kitchen, 10 @ 25 1/2  
Plated Rogers' A No. 1, 10 @ 25 1/2  
Britannia, 10 @ 25 1/2  
G. S. Hall, Elton & Co., 10 @ 25 1/2  
Scales-Buffalo Scale Works, 10 @ 25 1/2  
Fairbanks, 10 @ 25 1/2  
Stove Polish-Dixon's, 10 @ 25 1/2  
Palace, 10 @ 25 1/2  
Sausages-Lemon, Forceful, 10 @ 25 1/2  
Tacks-Half Weight Am. Iron, 10 @ 25 1/2  
Tea Trays, 10 @ 25 1/2  
Thermometers-Tin Case, 10 @ 25 1/2  
Tools-Tinners, 10 @ 25 1/2  
Vases-Palace, 10 @ 25 1/2  
Vases, 10 @ 25 1/2

**Wire.** - Bessemer Steel, 10 @ 25 1/2  
Wringers-Novelty, 10 @ 25 1/2  
Tin Plates, 10 @ 25 1/2  
10 1/2 in. Charcoal, 10 @ 25 1/2  
12 1/2 in., 10 @ 25 1/2  
14 1/2 in., 10 @ 25 1/2  
16 1/2 in., 10 @ 25 1/2  
18 1/2 in., 10 @ 25 1/2  
20 1/2 in., 10 @ 25 1/2  
22 1/2 in., 10 @ 25 1/2  
24 1/2 in., 10 @ 25 1/2  
26 1/2 in., 10 @ 25 1/2  
28 1/2 in., 10 @ 25 1/2  
30 1/2 in., 10 @ 25 1/2  
32 1/2 in., 10 @ 25 1/2  
34 1/2 in., 10 @ 25 1/2  
36 1/2 in., 10 @ 25 1/2  
38 1/2 in., 10 @ 25 1/2  
40 1/2 in., 10 @ 25 1/2  
42 1/2 in., 10 @ 25 1/2  
44 1/2 in., 10 @ 25 1/2  
46 1/2 in., 10 @ 25 1/2  
48 1/2 in., 10 @ 25 1/2  
50 1/2 in., 10 @ 25 1/2

**Sheet Zinc.**  
750 100 lb casks, 10 @ 25 1/2  
750 750 lb casks, 10 @ 25 1/2  
**Babbit Metal.**  
Iron Wire-Bright and Annealed, 10 @ 25 1/2  
Coppered, 10 @ 25 1/2  
Tinned, 10 @ 25 1/2  
Tinned Broom, 10 @ 25 1/2  
Copper-Sheathing 14 @ 18 oz., 10 @ 25 1/2  
Planned, 10 @ 25 1/2  
Bottoms, 10 @ 25 1/2  
Bolts, 10 @ 25 1/2  
Bradders, 10 @ 25 1/2

**Sheet Iron.**  
13 Common, 10 @ 25 1/2  
21 Common, 10 @ 25 1/2  
28 Common, 10 @ 25 1/2  
21 W. D. Wood & Co., Smooth Finish, 10 @ 25 1/2  
Planned, 10 @ 25 1/2  
Gen. Russia, No. 1, 10 @ 25 1/2  
Galvanized, 10 @ 25 1/2  
Tin Ware, 10 @ 25 1/2  
Deep Stamped Plain and Retined, 10 @ 25 1/2  
Japanned, 10 @ 25 1/2

**CHICAGO.**

(The Chicago Stamping Co., 72, 74 & 76 Lake St.)  
June 14, 1877.

**Tin Plate.**  
10 1/2 in. Ch. Good, 10 @ 25 1/2  
10 1/2 in. Ch. Good, 10 @ 25 1/2  
10 1/2 in. Ch. Good, 10 @ 25 1/2  
10 1/2 in. Ch. Good, 10 @ 25 1/2  
10 1/2 in. Ch. Good, 10 @ 25 1/2  
10 1/2 in. Ch. Good, 10 @ 25 1/2  
10 1/2 in. Ch. Good, 10 @ 25 1/2  
10 1/2 in. Ch. Good, 10 @ 25 1/2  
10 1/2 in. Ch. Good, 10 @ 25 1/2  
10 1/2 in. Ch. Good, 10 @ 25 1/2

**Black Tin.**  
Large size, 10 @ 25 1/2  
Small, 10 @ 25 1/2  
**Zinc.**  
Sheet, 10 @ 25 1/2  
Slab size or Spelter, 10 @ 25 1/2  
Copper, 10 @ 25 1/2  
Planished, 10 @ 25 1/2  
Bolt, 10 @ 25 1/2  
Brass, 10 @ 25 1/2  
Solder, 10 @ 25 1/2  
No. 1, 10 @ 25 1/2  
No. 2, 10 @ 25 1/2  
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No. 100, 10 @ 25 1/2

**Sheet Iron.**  
Common, 10 @ 25 1/2  
Smooth, 10 @ 25 1/2  
Smooth, 10 @ 25 1/2  
Smooth, 10 @ 25 1/2  
Smooth, 10 @ 25 1/2  
Smooth, 10 @ 25 1/2  
Smooth, 10 @ 25 1/2  
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Smooth, 10 @ 25 1/2  
Smooth, 10 @ 25 1/2

**Galvanized Iron.**  
No. 16 to 20, 10 @ 25 1/2  
No. 21 to 24, 10 @ 25 1/2  
No. 25 & 26, 10 @ 25 1/2  
**Russia Iron.**  
No. 1, 10 @ 25 1/2  
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No. 100, 10 @ 25 1/2

**PITTSBURGH.**  
The following are the Card rates, f. o. b. in Pittsburgh of Lewis, Oliver & Phillips, H. B. Newhall, 11 Warren St. New York Agent.  
Merchant Bar Iron, 10 @ 25 1/2  
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Beehive Hinges, 10 @ 25 1/2  
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MANUFACTURED BY

## The Michigan Stove Co.,

OF

### Detroit, Michigan.

### THE LEADING BASE BURNER.

It has no Equal. Complete in Construction. Beauty of Ornamentation Unsurpassed. Provided with Clinkerless and Adjustable Dumping Grate, and all the Modern Improvements.

Nickel Plated Panels and Trimmings: Portable Turn Buckles.

Nickel-Plated Standards and Porcelain Evaporating Cups. Patent Portable Tea Kettle Attachments, which enables you to have water on your stove at all times.

Every Stove Warranted.

The Garland with Low Down Oven provided with Automatic Shelf will be found the most complete, doing its work as well as the best cook stove.

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One Size Parlor Heater, No. 40.

In addition to the above we manufacture a complete line of

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Parlor

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Heater

STOVES,

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N. B.—The Garland is also offered to the trade by

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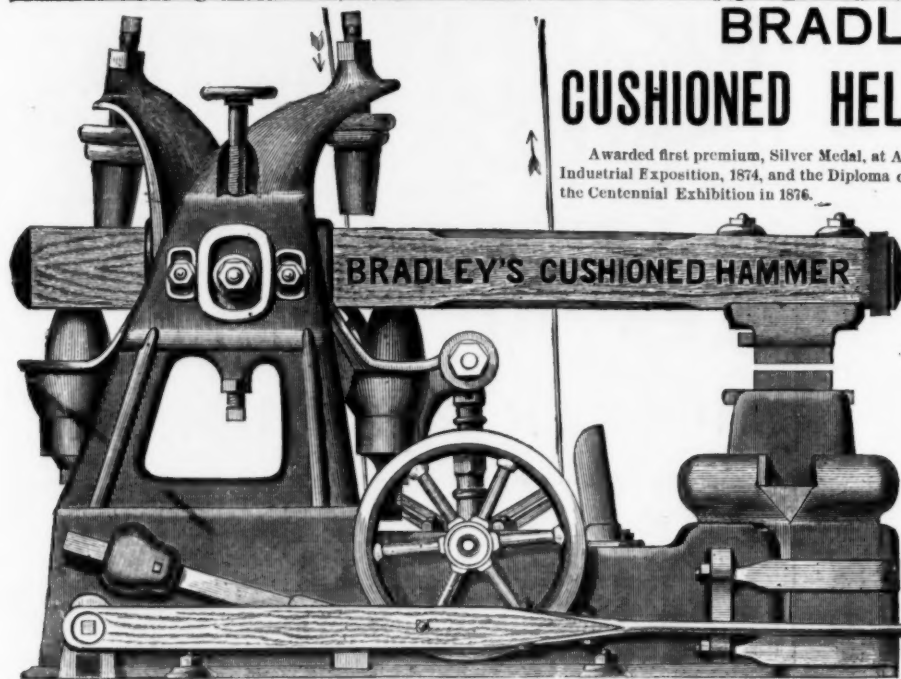
Providence, New York & Boston, Mass.,

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## BRADLEY'S CUSHIONED HELVE HAMMER.

Awarded first premium, Silver Medal, at American Institute Fair, 1873, Cincinnati Industrial Exposition, 1874, and the Diploma of Honor and Grand Medal of Merit at the Centennial Exhibition in 1876.



Being the highest award given any goods of their class in America or Europe.

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St., Chicago, Ill.

A. B. BARNES, Manager.

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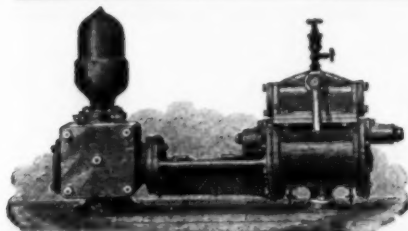


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## "SPECIAL" STEAM PUMP

Is the Standard of Excellence at Home and Abroad.

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Arranged for Removing Work from the end of top roll.

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Adjustable to any point of the stroke.

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With Shearing Attachments.

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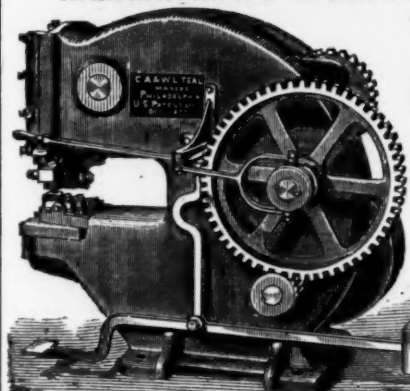
Drilling Machines, Hair Pick-

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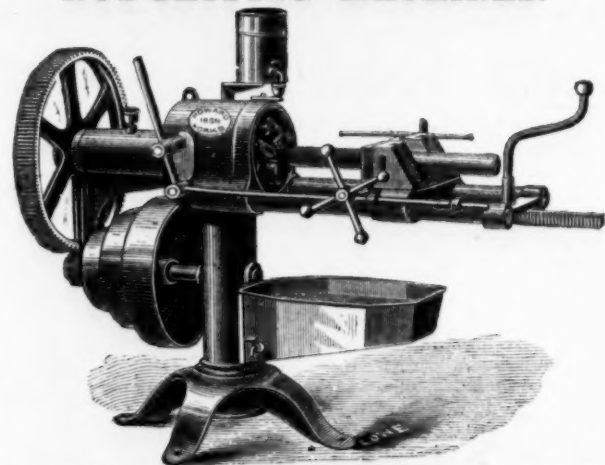
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The best, cheapest and most rapid Bolt Cutter made. Nearly a thousand in use. First Premium, Centennial Exhibition. Six different sizes: smallest cuts threads on bolts, and taps nuts from one-fourth to one and one-fourth inches; the largest to three inches. Send for circulars giving full particulars and prices.

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It is a common method to advertise Governors without cost, and then charge High Prices for doing what any good Governor will do. Various Governors inferior to the "Judson" are sold in this way, operating well enough for three months, to insure collection of the pay, but becoming useless after a year's wear—their construction lacking durability. The Judson Governor is guaranteed to be not only the best Regulator of Steam Engines, but also the most durable Governor made. Parties in buying other Governors should stipulate that their durability be guaranteed, and should also take care that they do not for much inferior Governors, pay higher prices than those shown in the accompanying list. We guarantee the Judson Governor will do all any other Governor can do, and in Accuracy and Durability—the main essentials—we guarantee it shall do more.

## Reduced Price List, FEBRUARY 1, 1877.

For dimensions of Governor, see Illustrated Price List.

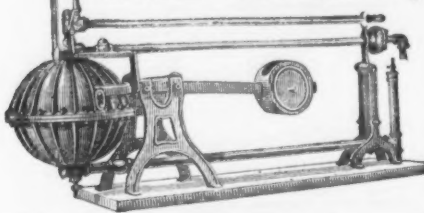


THE JUDSON PATENT  
Improved Steam Governor.

Size, Inch.	Plain.	Right Fin- ished.	Extra for Spiral Valve.
1	\$16 00	\$18 00	\$1 00
1 1/2	18 00	20 00	2 00
2	20 00	22 00	2 25
2 1/2	23 00	25 00	2 50
3	26 00	28 00	3 00
3 1/2	31 00	33 00	3 75
4	36 00	41 00	4 25
4 1/2	40 00	45 00	4 50
5	45 00	51 00	5 00
5 1/2	50 00	57 00	5 25
6	59 00	67 00	6 00
6 1/2	69 00	78 00	7 00
7	80 00	90 00	8 00
7 1/2	90 00	101 00	9 00
8	105 00	117 00	10 50
8 1/2	120 00	133 00	12 00
9	142 00	156 00	14 00
9 1/2	175 00	192 00	17 00
10	198 00	218 00	20 00
10 1/2	210 00	230 00	22 00

No Charge for Box and Cartage.  
JUNIUS JUDSON & SON, Rochester, N. Y.

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This Trap automatically drains the water of condensation from Heating Coils, and returns the same to the Boiler whether the Coils are above or below the water level in Boiler, thus doing away with pumps and other mechanical devices for such purposes. Apply to

Albany Steam Trap Company,  
Albany, N. Y.

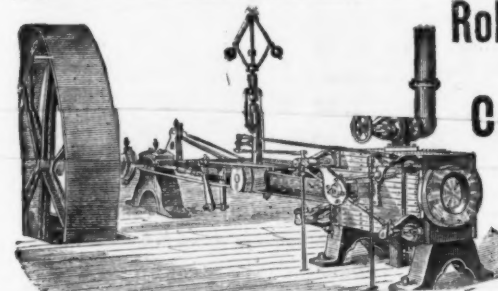
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Have constantly on hand and making

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Of recently Improved Construction. Pony Trip Hammers, Blacksmiths' Sheaves, Broaching and Stamping Presses, Iron Shop Cranes, Machinists' Tools, Gun and Sewing Machine Machinery. Make to order Gray and Charcoal Iron Castings of all styles and sizes not exceeding 15 tons weight, (making patterns if desired). Furnish Clamp Pulleys of light patterns, cut gears in a superior manner, &c., &c.



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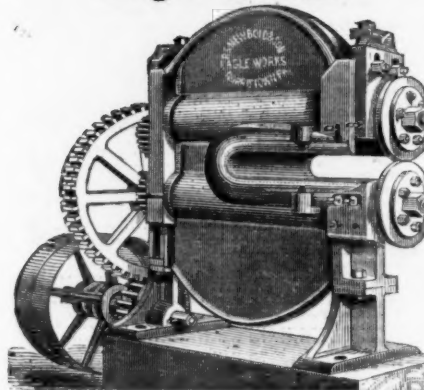
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Boiler Makers.

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IMPROVED ROTARY SHEARS,  
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Mill, Mining and Water Works  
Machinery. Air Compressors,  
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For Brick Yards and Fire Brick Works, makes 10,000 superior bricks per day with two horse-power. In use at Brookville Brick Yards, Lynchburg, Va.; F. W. Kleckhous, Wausau, Wis.; Cheltenham Fire Brick Works, t. Louis, Mo. Can hack bricks 12 high at once. The best, simplest and cheapest machine made.

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HAND DRILLS. CAR BOX DRILLS.  
SPECIAL DRILLS. For Special Work.

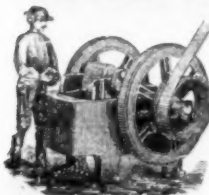
## H. H. HARVEY'S HAMMER AND TOOL WORKS, Augusta, Me.



SPECIALTIES.—Stone Cutters' Hammers and Tools, Quarrymen's Drills, Wedges and Half Rounds, &c., &c., Miners' Hammers and Tools, Blacksmiths' Hammers and Tools, Patent Hammers for picking burr stone. Also the common Mud Picks and Wood wedges steel or iron, &c. Solid eye Picks, with one lb. of best cast steel inserted in each pick. The above goods are warranted inferior to none, both in quality and style of finish. All hammers have true eyes and polished faces, and are made from solid cast steel. No charge is made for boxing or carting at Augusta; shipping facilities are excellent. Hammers made to any pattern or drawing. Capacity of works, one ton of hammers per day. A full line of the above goods constantly in stock. Catalogue on application.

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New Pattern with Important Improvements & Abundant Strength

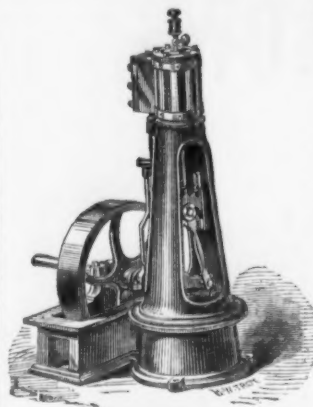


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I warrant every part of this Machine to stand the shock of the wheel running at 125 revolutions.

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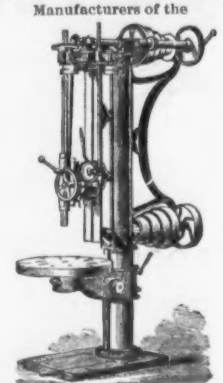
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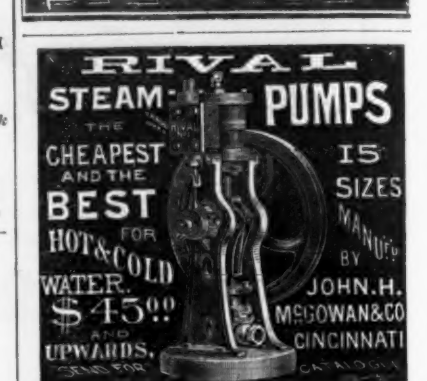
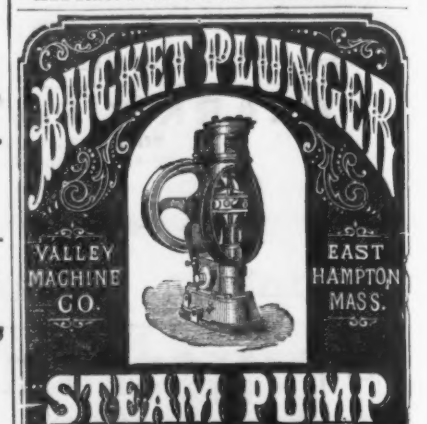
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Machinery, &amp;c.

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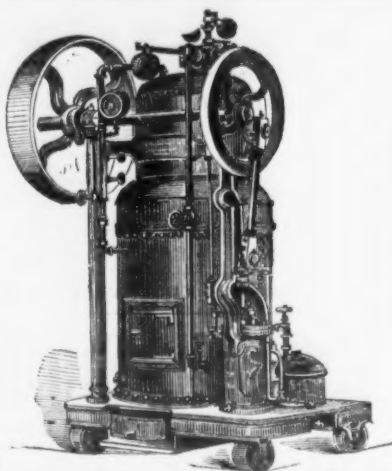
COMPACT,  
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DURABLE,  
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\$200.00.

Cheaper than any Engine offered of  
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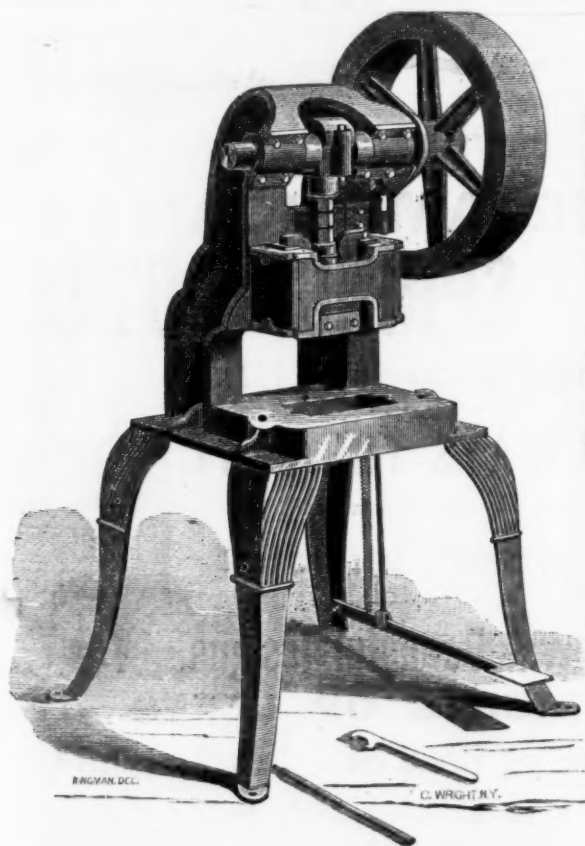
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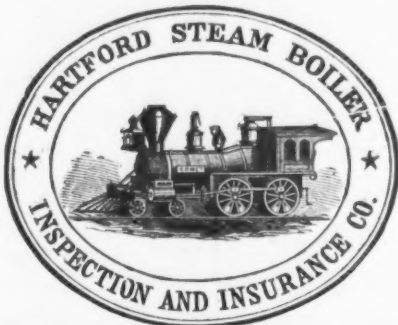
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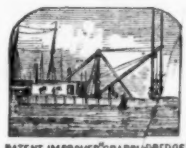
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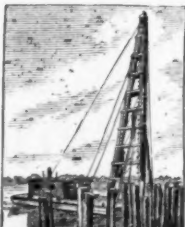
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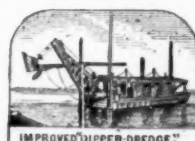
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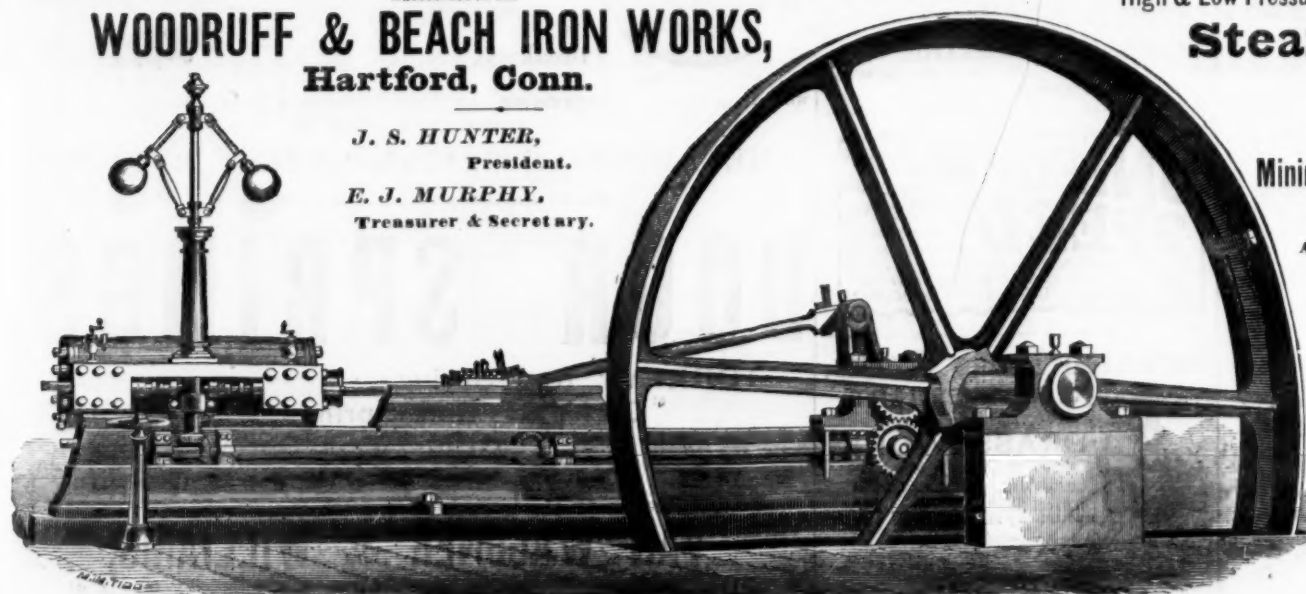
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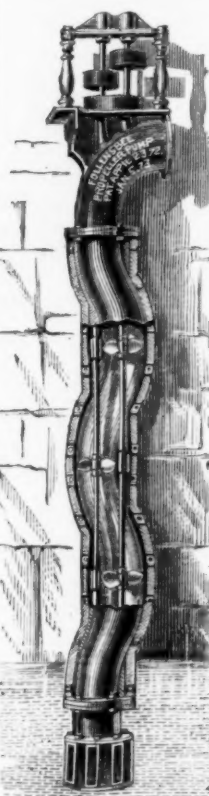
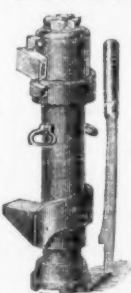
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XXX Genuine.....	55c	C.....	17c
XX.....	35c	D.....	14c
X.....	25c	E.....	12c
A.....	20c	F.....	10c
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"Note."—The above are my standard mixtures, and have given satisfaction wherever used, but I am prepared to make Anti-Friction Metal of any quality or mixture desired by the purchaser.

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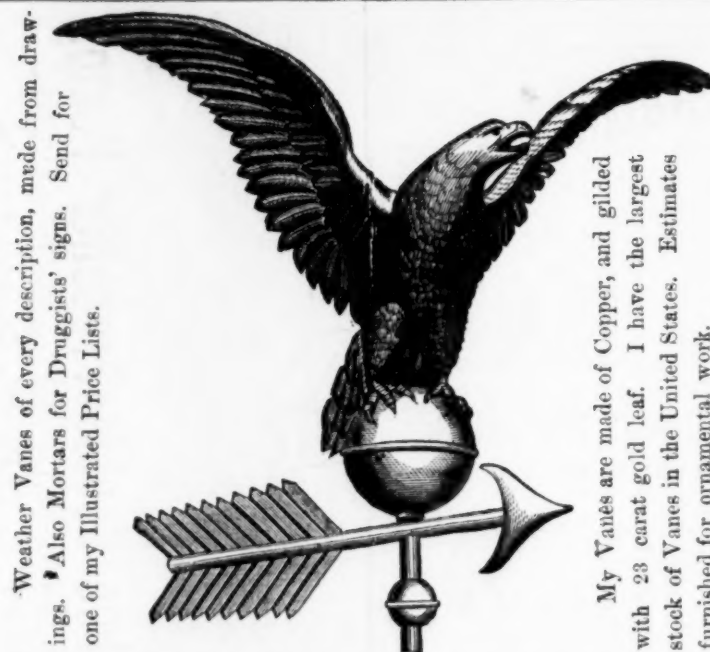


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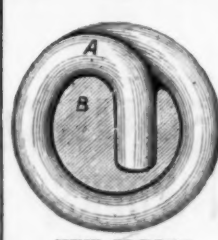
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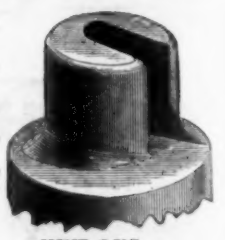
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